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Railway Age

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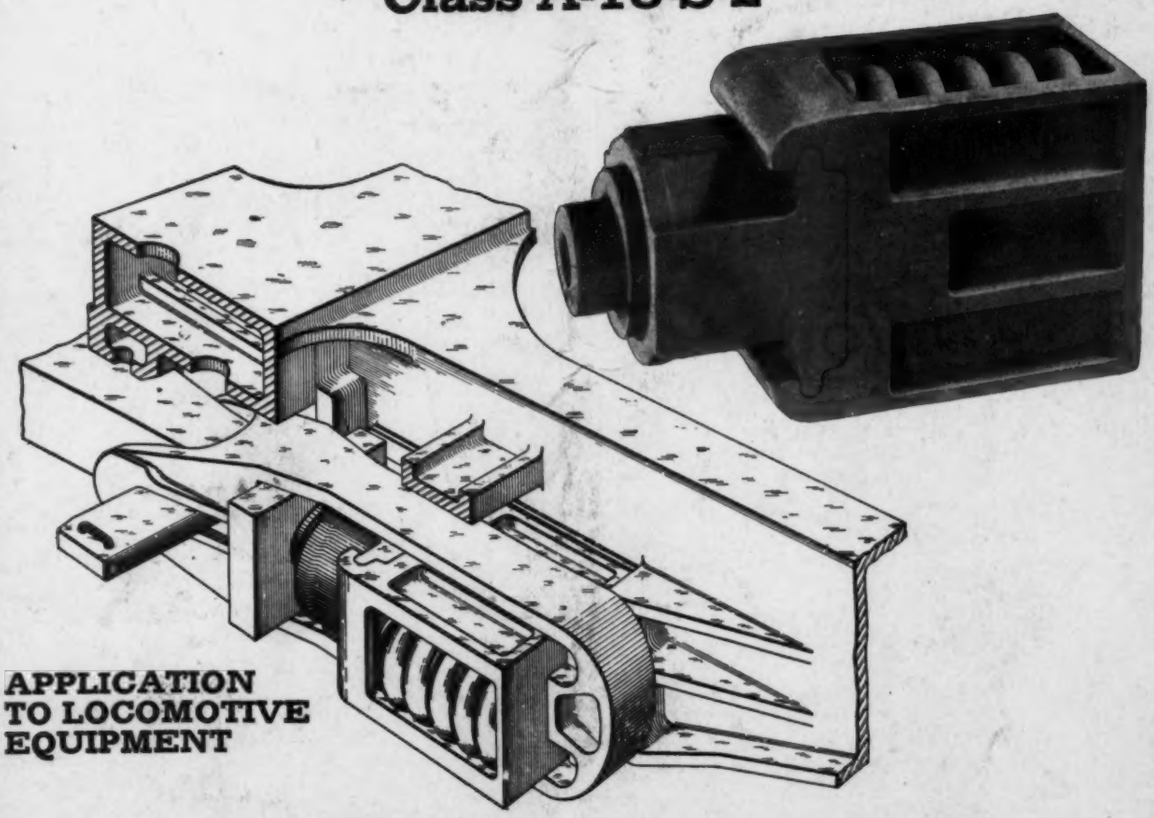

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Railway Age

DAILY EDITION

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In the series of editorial comments which the *Daily* has been publishing on Mechanical Division committee work, occasional reference has been made to the American Railway Engineering Association. This is because that organization has been unusually successful in securing splendid service from its committees. It may not be amiss to try to discover the secret of this success. The A. R. E. A. has a Board of Direction which corresponds to the General Committee of the Mechanical Division. Two committees report to the Board of Direction and are charged with certain definite responsibilities for the committee work. One of these is a Committee on Personnel, which studies the membership and selects those members who, in its opinion, are best fitted to serve on the various committees.

Planning Committee Work

The other committee is that on Outline of Work. It has the responsibility for outlining the work of each committee and seeing that the work of the committees is co-ordinated. To this end it holds a dinner at the close of the annual meeting, to which are invited the officers of the association and the committee chairmen. Here the work of the association for the coming year is discussed and outlined, so that each committee may thoroughly understand its assignments and responsibilities. These factors undoubtedly have much to do with the high type of committee service in the A. R. E. A.

Railway car lighting, while quite well standardized, is undergoing changes which improve the appearance of the car and the comfort of the passengers. These factors are interior finish, carefully selected light distributors and the increasing use of type "C" gas-filled lamps. The modern tendency toward lighter colored car interior finishes greatly enhances the appearance of cars and frequently results in improved lighting. Correctly designed reflectors will supply the proper amount of light to the reading plane without assistance from the side walls or ceilings, but the cheerful aspect of light interiors is important. Furthermore, it oftens happens that inefficient reflectors are used for sake of appearance and in such cases the light colored interior finish may partly offset inadequate reflectors. The increasing use of type "C" lamps is a rather more important factor. The type "C" lamp furnishes a maximum of light for a minimum current consumption, but because of the concentrated filament with its high intrinsic brilliancy, the light source must be protected or kept out of the direct line of vision. Lighting fixtures are frequently selected and located in the car so that they are much in evidence and give a brilliant appearance to the car. This is perhaps excusable in a dining car, but should not be the governing factor in coaches or other cars in which reading is done. Trying to read under a bad light frequently means a headache. A passenger with a headache is a poor advertising agent and such factors under the control of the car builder should not be overlooked.

Railway Car Lighting

The subject of car timber treatment is one which is coming in for more and more attention by progressive car department men. While opinions differ regarding the comparative value of the different treating processes, there is a general admission of their effectiveness in varied degree in increasing the life of timber used in car construction, thereby increasing the life of cars and decreasing both the labor and material cost of keeping car equipment in repair. H. S. Sackett, consulting timber engineer, Chicago, is quoted in the April 26 *Railway Age* as follows: "The decay of timber and lumber in freight cars represents a yearly loss of revenue equivalent to somewhat over 15 per cent of the average yearly gross revenue per car. There are more than 1,500,000 freight cars in service, which contain wood where it is subject to decay." Careful tests over a two-year period by the American Wood Preservers' Association are said to have shown that 80 per cent of repairs to wood and composite freight cars is necessitated by the decay of wooden members, the life of which could probably be at least doubled by the proper chemical treatment. In view of the magnitude of the prospective economies, the

Why Not Have a Timber Treatment Committee

treatment of car timber should be studied from every angle by railroad car men and advantage taken of all available sources of information to decide what can and what cannot be accomplished. The American Wood Preservers' Association has already been active in compiling data of this sort, and several of the railroads have had experience dating back several years. Desirable results might well follow the appointment by the Mechanical Division of a committee to collaborate with the American Wood Preservers' Association in studying the processes and results of car timber treatment.

Some Points on Unit Piling

Unit piling of material has come in for a large amount of attention during the last few years, many roads advocating its adoption for the care of practically every item of material now ordinarily carried in stock. For this reason, the method has been the target for much criticism on the part of some storekeepers who feel that it has been carried beyond all practical limits. After the small amount of wheat is sifted out of the tremendous amount of unit piling chaff, one is inclined to believe that unit piling, sensibly and not too enthusiastically applied, is a good thing and that its use entails at least no greater actual cost of storehouse operation than formerly, the increased costs of doing some phases of storehouse work being balanced by the decreased costs of others. The justification for unit piling is a "dollars and cents" proposition. As yet, however comparative cost figures have been difficult to secure with the result that discussions of possible savings have been largely made up of generalities. This is fortunate and every effort should be made to secure figures of real value, for such figures will go farther towards settling the question than all the rest of the arguments put together. Unit piling is now strictly a storehouse matter and apparently of interest to the stores department only. Yet it should be of quite general interest for it fits in well with improved methods for the requisitioning of material by other departments. As a matter of fact, unit piling, soundly and sanely applied, forms the foundation for the efficient and economical handling of material up to its actual application since it permits of a quick and accurate filling of orders to exact amounts. Thus it offers opportunities for economies in many ways totally dissociated from storehouse procedure.

Track Exhibits Are Unusually Complete

Those interested in car design will find the track exhibits far more complete and instructive than ever before. The Mississippi Avenue tracks of the Reading and the Georgia Avenue tracks of the Pennsylvania are only a short walk south of the pier and should not be overlooked even though there is so much to see and do on the pier itself. The new Pennsylvania cars built to A. R. A. standard designs are of prime importance. These include a box car and an automobile box car—both double sheathed—a double deck stock car, together with a box car on which the framing is left exposed for inspection, and a stock car with the upper deck removed and the framing exposed. The two quadruple-hopper cars built by the Bethlehem Steel Company, also make an especially interesting exhibit because of the fact that while they are similar in character, there is sufficient variation in design to afford a comparison of details. The quarduple-hopper car, while not new, is not so commonly seen as other types and the two cars mentioned afford an excellent opportunity for inspection. Steps and interior staging make it possible and easy for a thorough examination of both the inside and outside of the cars. One is being exhibited by the Reading and the other, a Norfolk & Western car, by the builder, itself. Another interesting car is the C. M. & St. P. composite hopper with drop bottom doors. Of passenger train equipment there is a suburban type coach built at the Harlan plant of the Bethlehem Shipbuilding Corporation, Limited, for the Reading, by whom it is being exhibited. This coach is particularly interesting because of the fact that, although it was designed originally for suburban passenger service, it has been found excellently adapted for main line traffic. Another passenger coach is that of the C. M. & St. P. Gasoline engine driven motor cars are represented by those of the Pennsylvania and the Reading, both of Brill design. The growing recognition of the importance of the records obtainable only by the use of a dynamometer car makes an inspection of the Nickel Plate car, exhibited by The Burr Compny, of importance to those interested in the use of locomotives and in improvements of cars and locomotives which may effect a reduction of train operating costs. Other novel features are a Chiles increased-spring-capacity truck under the C. M. & St. P. gondola car and a Globe trackless door hanger on an M.-K.-T. box car; also a scale test car shown by the Southward Foundry & Machine Company.

The Purchasing Officers and Division VI

The meeting of Division VI which starts today marks the twentieth anniversary of the old Railway Storekeepers' Association whose work it took over and continued. On another page will be found an article summing up the activities of the old association and of Division VI. Because of the nature of its organization and its personnel it was but natural that the work of the former association should be confined almost exclusively to stores department matters. With the advent of Division VI, the scope of the activities was broadened and purchasing department matters began to receive the attention which they had not had previously along the line of developing and utilizing better purchasing department methods and organization. A recent piece of work of this kind was the adoption of a new standard invoice form which represents a marked improvement over the varied types of forms in general use. This form will probably be widely adopted by the railways, although for some reason they are slow in starting to make use of it. Perhaps this may be due in part to the as yet relatively small active participation in the work of Division VI by purchasing officers. Although the participation of these officers has steadily increased since the formation of the division there is still evident some lack of realization of the fact that this division is as much a part of their work as of the stores group. When it is considered that the purchases and stores departments on the railways are becoming more and more closely co-ordinated, either because of reporting to the same head, or because the stores department reports to the purchasing department, it can readily be seen how the work of Division VI can be, and without doubt will be, an important influence on the future development of the purchasing department.

Machine Tool Exhibit Inspiring

To THE members of the Mechanical Division the exhibition of shop machinery and tolls at the convention this year must be inspiring. The older members, in particular, are familiar with the laborious and time-consuming methods formerly used for performing machine tool operations. They now see these operations performed on heavy-duty, modern machines equipped with high-speed steel cutters and every device to facilitate maximum production with a minimum of effort on the part of the operator. They realize, perhaps more than the younger men, what this means in speeding cars and locomotives through the back shop and thus hastening their return to revenue-earning service.

The machinery exhibit has increased in importance each year, and the present exhibition probably surpasses in size and diversity of machine types any previous collection of railway shop machinery ever exhibited. There are a total of 373 exhibits this year, occupying 102,988 sq. ft. of space. Of these exhibits fully 40 per cent are machines or shop tools. Machinery Hall was found inadequate to accommodate the machine tool exhibitors who overflowed to the Machinery Annex on Arkansas avenue, and machine tools may also be seen on various parts of the pier previously devoted exclusively to equipment manufacturers.

Aside from the size of the machinery exhibit, one of its most desirable features is the large proportion of machines which are in actual operation, fully 80 per cent being included in this classification. If there is anything that a railroad mechanical man likes to see better than a modern machine tool, it is to see that tool actually performing machine operations on the car and locomotive parts with which he is familiar. In this case his desire can be readily satisfied. He can see driving boxes machined, car axles turned, car wheels bored, rod bushings pressed in, links and guides ground, freight car grab irons forged, splice bars milled, boiler plates punched and sheared, steel billets shaped and planed, and many other operations.

The high power drilling machines and high speed drills in particular are worthy of study. According to one analysis, 17 per cent of all railroad shop machine operations are drilling operations. The total amount of drilling equipment required to handle this work in railroad shops throughout is enormous, and its condition as regards efficiency and ability to produce holes rapidly has an extremely important bearing on ship costs. Similarly the importance of the modern engine lathe as compared with obsolete types is frequently overlooked because of the commonness of this type of machine an dits lack of spectacular features. Plate and structural sheet punching and shearing machines may also be seen in operation; no boiler shop or steel repair shop can produce the desired output without an adequate equipment of machinery of this type.

The impression received from an examination of the machine tool exhibits in Machinery Hall and the Annex this year is the inadequacy of the time available for any one man to familiarize himself with all the advantages of all this equipment, and yet there are few tools on exhibition with which the average general foreman, shop superintendent, shop engineer, general tool supervisor, etc., should not be familiar in detail. It has been suggested, and from some points of view it would seem highly desirable, that some plan could be devised whereby a permanent exhibit of modern railway shop machinery, somewhat along the lines of the present exhibit, could be maintained at some central point available to as a large a number of railway mechanical men as possible.

To-day's Program

FOR THE next three days there will be two railway conventions in Atlantic City. Division V, Mechanical, will enter the second half of its program, which will include very largely the consideration of car department topics. Division VI, Purchases and Stores, will hold its three-day annual convention.

Division VI, Purchases and Stores—A. R. A.

The meetings of Division VI will be held in the Vernon Room of the Haddon Hall hotel. A complete announcement of the details of the program will be found in another article in this issue.

Division V, Mechanical—A. R. A.

The meetings of Division V will be he'd in the convention hall on the Million Dollar Pier. The convention will open at 9:30 a.m. sharp, and will adjourn at 12:30.

Address by Frank McManamy, commissioner, Interstate Commerce Commission.

Individual Paper "Governmental Relations to Transportation," by W. R. Cole, president, Nashville, Chattanooga & St. Louis.

Individual Paper "Proper Training of Shop Supervisory Forces," Mr. L. W. Baldwin, president, Missouri Pacific.

Discussion of Report on Specifications and Tests for Materials.

Election of Officers.

Discussion of Report on Car Construction.

Entertainment

10:30 a.m.—Orchestral Concert, Entrance Hall, Million Dollar Pier.

3:30 p.m.—Orchestral Concert with Impromptu Dancing, Entrance Hall, Million Dollar Pier.

4:30 p.m.—Tea will be served in Entrance Hall.

9:00 p.m.—Informal Dance with Special Features, Ball Room, Million Dollar Pier.

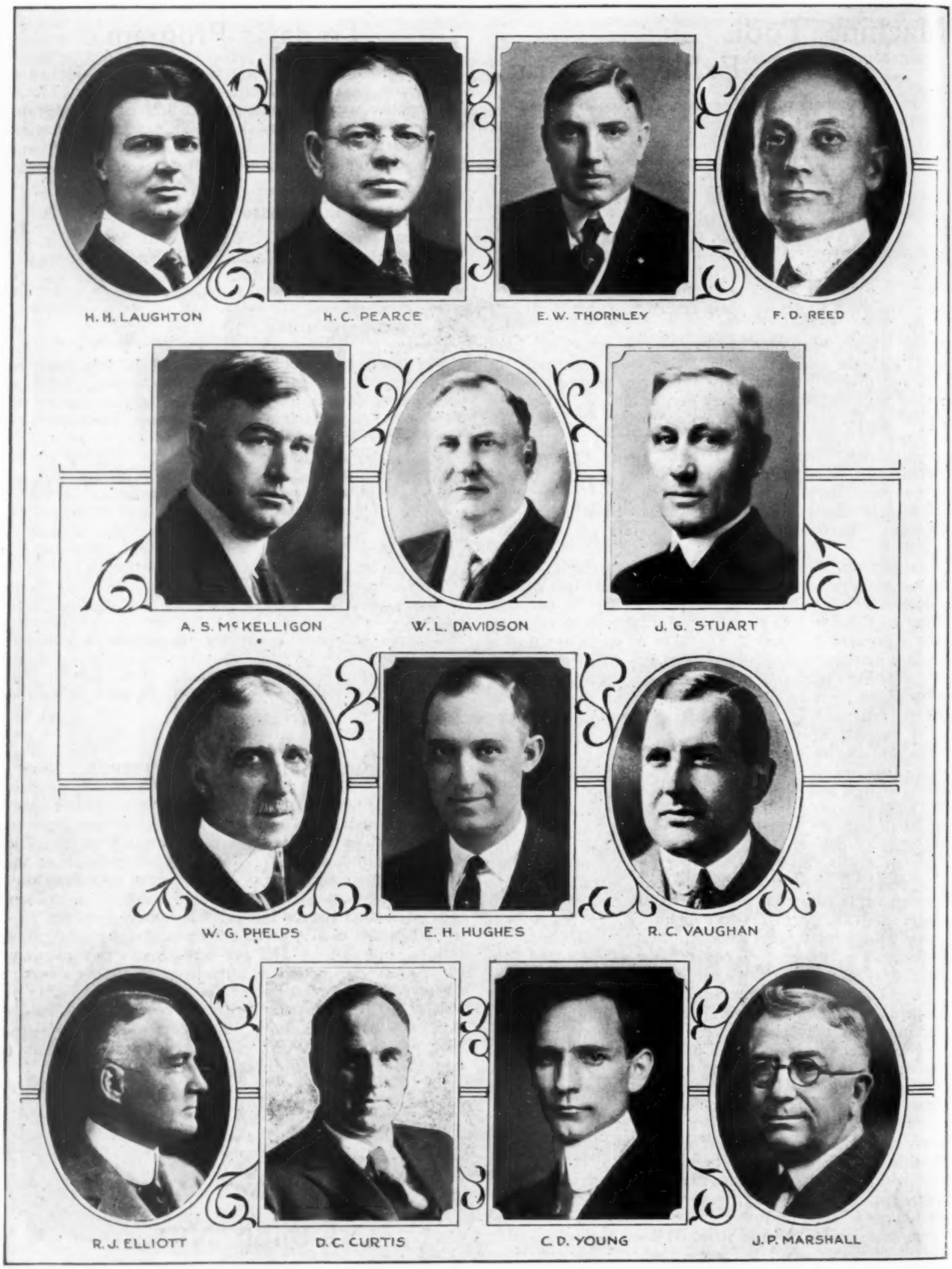
Registration Figures

AT 3:30 YESTERDAY afternoon the registration figures continued to show a continuous increase over all previous records. At that time a total of 5765 were registered, which is 1589 or 38 per cent. above the last convention, and 1012 or 21.3 per cent. above any previous convention. The percentage increase in railway men attendance is even higher. There have been 956 registered, which is 319, or 50 per cent., above the last convention and 244, or 34.2 per cent., above any previous convention. Likewise, the attendance of supply men has increased. A total of 2467 have registered, which is 411, or 20 per cent above the last convention, but only 205, or 9 per cent. above the largest previous registration, which was in 1920. Below are given comparative figures for the last four conventions:

	1919	1920	1922	1924
Members, Mechanical, A. R. A.	630	707	637	956
Members, Purchases and Stores	....	140	49	176
Special guests	650	441	407	651
Supply men	2246	2262	2056	2467
Railroad ladies	600	569	526	867
Supply ladies	450	634	501	648
Totals	4576	4753	4176	5765

Exhibit Notes

THE KREBS MANUFACTURING COMPANY, Chicago, Ill., is showing universal transmission pulleys for car lighting equipment in space No. 544. The Company is represented by E. C. Smith.



The Members of the General Committee of Division VI—Purchases and Stores

The Officers of Division VI—Purchases and Stores.

Purchases and Stores Meeting Starts Today

Excellent Program Marks Twentieth Anniversary of Old Railway Storekeepers' Association

THE PRESENT year marks the twentieth anniversary of the old Railway Storekeepers' Association, now Division VI—Purchases and Stores of the American Railway Association. Many remarkable changes have taken place in railway purchases and stores methods, and particularly the latter, since the day in 1904 when a small group of far-seeing storekeepers joined together to form an association for the promotion of better methods of storekeeping. Some of the changes have represented extensive improvements over previous methods, some have been almost revolutionary, and others have been the result of the opening up of entirely new lines of endeavor. All have had a decided effect and, as a result, railway purchasing and storekeeping have been factors of ever-increasing importance in the business of producing economical and efficient transportation. Doubtless this has been largely due to the foundation laid by the old association and it reflects well-merited credit upon the early members. Upon this foundation the representatives of Division VI have continued to build and although their endeavors have not been unattended by difficulties, the work has gone steadily forward.

Beginning today, the division, under the chairmanship and vice-chairmanship respectively of U. K. Hall, general supervisor of stores on the Union Pacific, and A. W. Munster, purchasing agent of the Boston & Maine, starts a three-day meeting. Some 14 committee reports will be presented on subjects which affect not only purchases and stores procedure but that of other departments as well. Many reports contain cost and performance figures not hitherto compiled or available. There will also be presented eight special papers on subjects of timely interest and in addition two motion pictures, one on the supply train operation of the Northern Pacific and one on the stores delivery of material to users at shops on the Southern Pacific.

Today's Program—Haddon Hall

9:00 a.m.	Meeting called to order—Invocation.
9:10 a.m.	Remarks by J. H. Waterman.
9:30 a.m.	Address by R. H. Aishton, Pres., A. R. A.
9:45 a.m.	Address by W. G. Besler, First Vice-Pres., A. R. A.
10:00 a.m.	Address by Col. H. C. Smither, Chief Coordinator, Bureau of the Budget, Dept. of Commerce.
10:30 a.m.	Address by Chairman.
10:45 a.m.	Communications.
10:50 a.m.	Appointment of Committees (Resolution and Memorials).
10:55 a.m.	Action on Minutes of 1923 Meeting.
11:00 a.m.	Report of General Committee.
11:05 a.m.	Subject 1, Stores Department Book of Rules.
11:30 a.m.	"Material Procurement," by E. J. Remensnyder, Ass't P. A., P. R. R.
11:45 a.m.	Subject 4, Material Accounting and Office Appliances.
12:00 m.	Subject 14. General Accounting.
12:30 p.m.	"Bonus to Efficient Stockmen," by J. E. Mahaney, Supt. of Stores, C. & O.
12:45 p.m.	Subject 6, Stores Department Buildings and Facilities.
1:15 p.m.	"Duties and Opportunities of a Traveling Storekeeper," by W. Dixon, Inspector of Stores, M. P.
1:30 p.m.	Adjournment.

It may not be amiss at this time to point out briefly some of the activities and accomplishments of the old Railway Stroekeepers' Association. The association same into being in February, 1904, when a group of 16 general storekeepers under the leadership of J. P. Murphy, now general storekeeper of the New York Central Lines West, met in Chicago. At this preliminary meeting an association was formed, subjects for consideration were selected, notices sent out and the wheels of the Railway Storekeepers' Association started. The first annual meeting was held in Chicago on May 23 and 24 of the same year. About 14 principal subjects and 19 secondary or topical subjects were

selected. They were well chosen and although the necessities which prompted the selection of some have now passed, as have the subjects themselves, many of them are still of marked importance. From this small beginning the Railway Storekeepers' Association grew and it grew rapidly. Unlike some associations it did not have to struggle along for years with a small number of members for it received a generous support almost at once. While its constitution contemplated the discussion and consideration of purchasing department matters, it did not secure much of a membership from this department; for years it remained primarily a storekeepers' association in fact as well as in name.

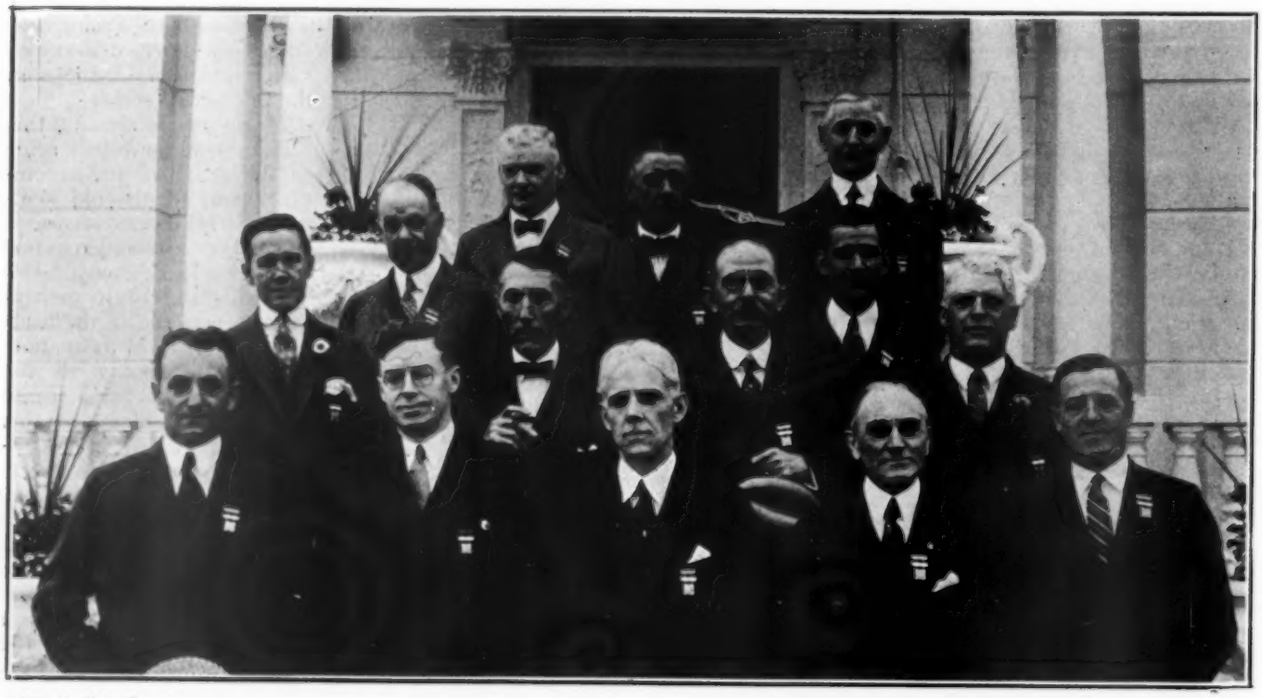
From 1904, the Railway Storekeepers' Association held annual meetings up to and including 1916, when due to the exegencies of the war period, the meetings were discontinued until 1919. The new name was adopted in 1919 and the work was continued under the title of Division VI, Purchases and Stores, American Railway Association. While there have been many opinions expressed as to the advantages and disadvantages of this arrangement, there is no doubt but what as Division VI the scope of the old association work was greatly broadened. Its activities now became of a more general railroad character and the methods and standards which it promulgated were affected by and had an effect upon the other departments of the railroads to a degree far greater than had previously been true.

Much of the work of the old association has become standard practice on a large number of railroads. Much of it has been adopted so long that on some roads the manner of its inception has almost been forgotten. A detailed list of the many activities of the association, and in the later years of Division VI, would form an unwieldy tabulation. It is, however, well worth while to point out some of the more important ones. From a guidance standpoint, the more important ones are presumably, the Book of Rules, the standard classification of scrap, the stock book, specifications for materials, the classification of materials and organization charts, etc. In the way of improved facilities and methods, there are the design of modern storehouses, oil houses, etc., and their equipment, the reclamation of material, the unit piling of material, supply train operation and line delivery of material, the stores delivery of material to users at shops, the handling of stationery and many others.

Some of the practices which were developed by the Railway Storekeepers' Association have since been taken over and adopted by other associations or bodies, as for instance, the standardization of tinware. These standards were adopted in 1911 but were subsequently taken over and are now a part of the standards of Division V—Mechanical. It is interesting to recall that these same standards were adopted by the U. S. Railroad Administration, along with the Railway Storekeepers' Association's classification of scrap material—revised in conjunction with a committee of the Iron and Steel Institute—, the classification of material and the Book of Rules, all as standard practice for the railroads during federal control.

When Division VI came into existence, the activities formerly pursued by the old association were greatly broadened. This is indicated to some extent by the title Purchases and Stores. Although purchasing officers had taken some part in the earlier affairs of the association, it was not until Division VI was formed that their participation became extensive. At that time, the committees were reorganized and the subjects and assignments changed so as to combine some of the original subjects and also to include others of particular interest to the purchasing officers. As the value of the work of the division became more widely known and appreciated, their participation in its activities increased until today it can be fairly said that Division VI is more thoroughly representative of the purchases and stores departments of the railways of United States and Canada than ever before in its history.

* * *



Atlantic Foto Service.

Executive Committee of the Railway Supply Manufacturers' Association

Lower row (left to right): Gilbert E. Ryder, Leroy S. Wright, Vice-President; Charles W. Beaver, President; W. H. S. Bateman, S. H. Campbell. Upper rows (left to right): W. K. Krepps, L. B. Sherman, Arthur Allan, Charles C. Castle, H. E. Daniels, George T. Johnson, John D. Conway, Secretary-Treasurer; George W. Denyven.

Registration, American Railway Association

Division V—Mechanical

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Andrews, W. L., V. P., C. & P., Brighton.
Ayers, A. R., Asst. G. M., N. Y. C. & St. L., Marlborough.
Baldwin, L. W., Pres., M. P., Marlborough.
Ballantine, N. D., Asst. to Pres., S. A. L., Haddon Hall.
Barr, Paschall W., G. F., Penna., Walton.
Barry, J. J., M. M., N. & W., Haddon Hall.
Bibb, Arthur, D. & H., Marlborough.
Belk, M. S., Supvr. Air Brakes, Southern, Brighton.
Bender, W. A., Dist. M. C. B., B. & O., Knickerbocker.
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Bertram, B. C., Ch. Loco. Insp., L. V.
Binghan, P. R., G. F., Penna., Shelburne.
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Blest, M. C., Ch. Eng., P. A. & McK., Seaside.
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Brennan, James J., M. M., D. & H.
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Bryan, R. D., G. C. F., A. S. & S. F., New England.
Budwell, Walter, M. M., N. & W., Haddon Hall.
Burkhard, A. A., G. F., N. Y. C., Pennhurst.
Butler, E., Secy. to Ch. Mech. Officer, M. P., Marlborough.
Buzzell, O. D., Asst. Supt. Shops., A. T. & S. F., Chalfonte.
Campbell, W. L., Asst. V. P., Erie.
Carey, D. P., M. M., N. Y. N. H. & H., Princess.
Carr, Robert K., Ch. M. P. Cl., N. & W., Marlborough.
Caskey, J. F., Supt. Tel., L V, Haddon Hall.
Chase, D. K., G. F., Penna.
Clarke, A. B., G. F., P. & R., New England.
Coe, T. W., M. M., N. Y. C. & St. L. Knickerbocker.
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Dougherty, Geo. E., Examiner, I. C. C., Shelburne.
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Elvin, Andrew, G. F., D. L. & W., Princess.
Emerson, Harrington, Cons. Eng., B. & O.
Fisher, G., Supt. Car Equip., C. N. R., Chelsea.
Fitzgerald, L. C., Supt. Car Repairs, Erie, Princess.
Frink, E. O., Prin. Asst. Eng., S. A. L.
Fouse, Frank, G. F., L. V., Chalfonte.
Foster, W. H., G. F., Virginian.
Garaghty, W. C., A. B. Inst., B. & O.
Geib, F. A., G. F., Penna., De Villa.
Gettys, H. L., G. F., Virginian, Haddon Hall.
Gill, C. A., S. M. P., B. & O., Ambassador.
Gillespie, P. K., Air Brake Inst., C. of N. J., Lyric.
Gimpel, J. H., Asst. Supt. Car Dept., Wabash, Strand.
Goddard, G. T., Gen'l. Elec. For. I. C., Dennis.
Gorg, F. E., S. M. P., P. S. & N., Davenport.
Gray, Guy M., S. M. P., B & L. E., Strand.
Haag, F. C., Shop Insp., B. & O., Craig Hall.
Hackenberg, J. O., Supt., Penna.
Hagan, John J., Asst. For., M. P. & R. E., P. & R.
Hall, Wm. H., Ch. Car Insp., C. of N. J., Princess.
Hardy, W. E., G. F., C. of N. J., Brady.
Hare, C. C., B. & O., Chalfonte.
Hazzard, W. L., Supvr. Piece Work, N. Y. C., Traymore.
Hellman, Chas., G. C. F., P. & S., Terminal .
Hendricks, F. L., Ch. Joint Car Insp., Penna., Monticello.
Hennessey, J. J., Asst. C. B., C. M. & St. P., Traymore.
Hergenham, J. W., Ch. Service Test Insp., N. Y. C., Craig Hall.
Hertz, D. E., M. P. Insp., B. & O., Haddon Hall.
Hickok, W. H., C. C. I., D. & H., Marlborough.
Hoffman, W. G., G. F., C. of N. J., Lexington.
Hogarth, Wm., M. C. B., Cudahy Refrig. Lines, Strand.
Huston, F. T., M. M., Penna., Shelburne.
Hunt, C. T., M. P. Inspr., Penna.
Hunt, Robert, Mech. Eng., S. A. L., Chelsea.
Hyman, T. M., Supt. Car Shops, C. N. R., Ambassador.
Icsman, John B., G. F., L. & H. R.
Jefferson, M., M. M., L. V., Princess.
Jennings, J. F., Asst. S. M. P., M. C., St. Charles.
Johnson, E. L., Eng. Service Tests, N. Y. C., Craig Hall.
Johnston, W. D., M. M., B. & O., Ambassador.
Jones, V. L., Asst. Mech. Eng., N. Y. N H. & H., Traymore.
Keegan, J. E., Gen. Car. Insp., Penna., Breakers.
Keller, J., Supt. Fuel Dept., L. V., New England.
Kelley, W. M., G. F., Penna.
Kelley, W. T., Mech. Eng., I. C., Strand.
Kinter, D. H., G. F. C. D., Monongahela, Shelburne.
Koch, Philip, G. F., P. & R.
Kline, J. F., Supvr. Shop Mach. & Tools, B. & O., Brighton.
Krueger, A. J., M. C. B., N. Y. C. & St. L., Haddon Hall
Lacy, H. S., P. A., Jacksonville Term., Traymore.
Lacey, P. T., Supt. Bolt & Forge Shop, B. & O., DeVille.
La Dow, B. F., Power Dir., Penna.
La Mar, A., M. M., Penna., Dennis.
Lancaster, J. R., Supt. Shops, D. L. & W.
Langton, G. H., M. M., C. & O., Ritz-Carlton.
Lee, F. H., Supvr. Car Main., B. & O. Knickerbocker.
Lehr, H. W., G. F., C. D., Penna., Morton.
Lenz, W. W., Asst. Chi. Cl., Penna.
Leonard W. W., Elec. Car Ltg. Eng., B. & O., New Davenport.
Lockwood, B. D., Ambassador.
Looney, J. O., Gen. A. G. Insp., N. & W., Marlborough.
Luckie, G. O., G. F. M., K. T., Ambassador.
Lynn, Samuel, M. C. B., Penna., Penn House.
Machin, Edwin, G. F., Penna., Elberon.
Marlow, G. A., Ch. Car Insp., Penna., Breakers.
Matthew, J., Ch. Car Insp., Wabash, Pennhurst.
Mayer, F. A., Southern, Arlington.
McCann, J. R., Ch. Cl. S. M. P., W. & L. E., Ambassador.
McClennan, W. J., Gen. Shop Insp., N. Y. C., Dennis.
McGann, C. E., M. M., B. & O., Haddon Hall.
McGill, A. M., Asst. Supt. M. P., L. V., Princess.
McIlvaine, C. L., S. M. P., Penna., Brighton.
McMullen, John, Supt., Car Dept., Erie, Traymore.
McMillan, A. E., M. M., B. & O., Haddon Hall.
McMunn, Wm., Gen. Car Inspr., N. Y. C., Traymore.
Meade, P. J., M. M., A. C. L., Chalfonte.
Mehan, J. E., Spec. Rep., C. M. & St. P., Traymore.
Messeroll, D. C., Supt. Car Shops, C. N. R., Chelsea.
Milheisen, Gus, Asst. Gen. Boiler Insp., A. T. & S. F.
Miller, B. E., Mas. Paint., D. L. & W., Elberon.
Miller, E. B., Dist. M. C. B., B. & O., Lexington.
Minette, John H., Asst. G. F., B. & A., Shelburne.
Minick, Eli, Gen. Frt. Car For., L. V., Monticello.
Mitchell, W. A., Supt. C. D., M. K. T., Ambassador.
Moir, W. B., Gen. Car Insp., Penna., Elberon.
Moody, Wm J., Treas., Erie, Marlborough.
Moore G. H., M. P., Insp., Penna., Elberon.
Nichols, C. H., R. F. of E., So. Buffalo.
O'Brien J. E., Ch. M. P. & Eq., S. A. L., Ambassador.
O'Brien, John J., Supt. C. D., Term. R. R. Assn. of St. L., Brighton.
O'Connor, C. D., Supt., Aliquippa & So., Pennhurst.
Onderdonk, J. D., Eng. Tests., B. & O. Traymore.
Owen, W. J., Ch. Interchange Insp., P. & P. N., Breakers.
Painter, J. H., M. M., A. C. L., Chalfonte.
Parrott, A. L., Shop Insp., B. & O., Craig Hall.
Patmor, N. F., M. C. B., P. & W. V., Traymore.
Patterson, J. C., Reg. Eng., Erie, Llewellyn.
Phipps, J. W., A. R. A. Insp., B. & O., Davenport.
Piollet, H. Asst. Supt. Fuel Dept., L. V., Osborn.
Porterfield, N. B., M. M., Penna., Haddon Hall.
Powers, C. E., Spl. Insp., B. & O., Arlington.
Puffer, C. E., M. C. B., B. R. & P., Fredonia.
Raedel, W. P., M. M., P. R. R., Craig Hall.
Richards, B. C., Asst. to Supt. R. S., M. C., Traymore.
Robinson, T. M., Ch. Draftsman, H. V., Chelsea.
Rockfellow, W. E., G. C. F., N. Y. C., Pennhurst.
Rogers, S. M., V. P., E. J. & E., Ambassador.
Rogers, W. R., Ch. Interchange Insp., All Lines, Princess.
Satterfield, H. W., Ch. Cl. M., P. Dept., C. of N. J., Wiltshire.
Schultz, F. C., Ch. Interchange Insp., All Chicago Lines, Traymore.
Seifert, S. P., Supvr. C. D., N. & W., Marlborough.
Selloy, S. H., Genl. Car For., B. & A., Pennhurst.
Senger, J. W., Supt. R. S., N. Y. C., Traymore
Sheppard, E. R., Ch. Car Insp., Penna.
Shugars, G. C., M. P. Insp., P. & R., New England.
Shull, G. F., Supt. M. P., C. C. & O., Marlborough.
Sicardi, E. C., Union Tank Car Co., Ritz-Carlton.
Sleeman, Wm. C., Car Eng., Tenn. Coal Iron, Traymore.
Smith, P. G., Asst. to S. M. P., Me. Cent., Chelsea.
Smith, Wm. B., R. F. E., B. & A., Pennhurst.
Snyder, F. I., Asst. G. M., B. & L. E., Strand.
Snyder, F. M., G. F., Penna., Craig Hall.
Speck, H. J., G. F., Penna., Elberon.
Stanley, O. G., Supt. of Shops, B. & O.
Stein, C. H., Gen. Mgr., C. of N. J., Chalfonte.
Stewart, L. M., Chi. Boiler Inspr., A. C. L.
Sutherby, A., M. M., Erie, Shelburne.
Sweetman, E W., S. M. P., Southern, Traymore.
Swope, Bruce M., M. M., Penna., The Breakers.
Tapman, W. H., Genl. Mech. Insp., B. & O., Arlington.
Taylor, A B., Ch. Cl. to S. M. P., Southern, Traymore.
Taylor, F. C., G. C I., Penna.
Taylor, J. H., For. Elec. Locos., B. & O., New England.
Turner, J. S., Marlborough.
Vick, R. E., Trav. Car Insp., M. & O.
Walker, Sylvester, Asst. G. F., Penna., Craig Hall.
Wallace, O. A., Genl. Supt. Car Repairs, A. C. L., Fredonia.
Watson, B. B., M. P. Insp., Penna., Elberon.
Weightman, J. J., Ch. Cl. M P. Dept., P. & R.
White, C. M., Supt., Monongahela Conn, Pennhurst.
Wildes, Elijah D., G. F., N. Y. N. H. & H.
Williams, J. S., M. M., C. & O., Watkins.
Wilson, C. A., M. M., Penna.
Wilson, D. H., Shop Supt., F. E. C., Sterling.
Wilt, W. L., Penna., Dennis.
Winship, R. B., Asst. Mech. Engr., C. P. R., Strand.
Wyman, R. L., M. M., L. & N. E., Pennhurst.
Yarewood, J. J., L. I., Pine Hall.
Yergy, H. J., Ch. Car Insp., Penna.
Yorke, N. R., Ch. Mech. Insp., N. Y. N. H. & H., Traymore.
Young, George L., G. F. Boiler Dept., P. & R., Albermarle.
Young, J. Bertram, Eng. Tests, P. & R.

Division VI—Purchases and Stores

Adams, B. T., Storekeeper, I. C., Dennis.
Alexander, G. W., G. S., Cent. of Ga., Ambassador
Austin, F. S., G. S., B. & A., Traymore.
Baldwin, R. W., Storekeeper, Penna., Princess.
Bennett, J. L., P. A., C. of Ga., Traymore.
Bennington, J. R., Asst. P. A., L. & N. E.
Besler, W. C., Pres., C. of N. J., Dennis.
Boveer, K. M., Supvr. Stores, Penna.
Bowen, Thos., For. Stores Dept., P. & R.
Bryan, R. E., Sec. to Dir. of Pur., C. & O., Breakers.
Buchenery, H. P., Storekeeper, S. P., Traymore.
Buell, C. J., G. S., D. M. & N., Haddon Hall.
Buskey, C. A., Storekeeper, N. & W., Traymore.
Clem, Wesley A., Asst. P. A., P. & R.
Colklesser W. R., P. A., Southern, Shelburne.
Cooley, LeRoy, G. S., C. of N. J., Haddon Hall.
Corbett, John W., P. A., C. N. R., Chalfonte.
Davidson, W., G. S., I. C., Dennis.

Dawson, V. N., Storekeeper, B. & O., Ambassador.
Downing, R. E., Storekeeper, I. C., Breakers.
Dreas, Harry E., Asst. For. Store Dept., P. & R.

Ehrhart, E. D., Lumber & Wire Agt., Penna., Brighton.
Eshbach, Harry W., Stores Dept. For., P. & R.

Farrell, W. J., Secy. Div. VI., Purchases & Stores, A. R. A., Chalfonte.
Fechtig, F. H., P. A., A. C. L., Traymore.
Fiegel, N., Storekeeper, S. P., Ambassador.
Frier, T. J., P. A., Wabash, Marlborough-Blenheim.
Fulmer, W. W., Pur. Dept., Penna., Glaslyn.

Genther, J. S., G. S., L. & N. E., Pennhurst.
Gilbert, A. V. B., P. A., A. B. & A., Brighton.
Goodchild, A. A., G. S., C. P. R., Haddon Hall.
Gowland, S. I., Asst. G. S., Penna.
Grammer, P. L., Asst., P. A., Penna., Traymore.
Grebow, M. J., Secy. to G. S., B. & O., St. Louis.
Greeham, E. S., P. A., O. M. & S., Watkins.
Green, L. J., Asst. G. S., N. Y. C., Princess.
Greenfield, Hugh, P. A., D. M. & N., Haddon Hall.

Hagerty, Edwin D., Dist. S. K., Penna.
Hall, U. K., Gen. Supvr. of Stores, U. P., Traymore.
Hall, W. B., G. S., D. & R. G. W., Traymore.
Hallam, E. M., Ch. Cl. to G. S. K., C. N. R., Ambassador.
Hanna, J. L., Gen. Mat. Supvr., Penna., Knickerbocker.
Hanson, E. E., Asst. P. A., Southern, Traymore.
Harte, E. P. G., Off. Mgr., S. A. L., Ambassador.
Harty, E., Storekeeper, S. P., Traymore.
Hayden, A. L., Trav. Storekeeper, S. P., Ambassador.
Hickey, R. W., G. S., Detroit & Mackinac, Schlitz.
Hicks, W. L., Asst. Storekeeper, Penna.
Hildenberger, Geo. A., P. A., Cornwall, Strand.
Hiner, W. J., P. A., C. C. C. & St. L., Shelburne.
Holl, Chas. F., For. Stores Dept., P. & R.
Holmes, Geo., Asst. to P. A., M. C., Colonial.
Hooper, H. H., P. A., C. & I., Ambassador.
Hopkins, W. A., G. P. A., M. P., Marlborough.
Howe, C. A., P. A., P. & W. Va., Ambassador.
Huckey, W. P., Storekeeper, N. Y. C., Princess.
Huff, F. E., Trav. Storekeeper, N. & W., Traymore.
Huffman, R. S., Asst. G. S., N. Y. C., Princess.

Illige, W. E., Storekeeper, B. & A., Haddon Hall.

Jones, G. R., Stores Insp., N. Y. C., Chalfonte.
Jones, M. G., Storekeeper, Penna., Princess.

Kavanagh, J. P., G. S., C. & O., Ritz-Carlton.
Kenzel, C. H., P. A., E. J. & E., Chelsea.
King, D. C., P. A., Virginian, Chelsea.
Kinnear, C. W., Asst. G. S., Penna., Chalfonte.
Krampf, L. P., Supply Agt., M. P., Chalfonte.
Kroha, A. J., Asst. G. S., C. M. & St. P., Haddon Hall.
Kyle, C. C., G. S., N. P., Haddon Hall.

Lamneck, E. T., Asst. to P. A., Penna.
Laret, A. N., Asst. to V. P. & P. A., S. L. & S. F., Traymore.
Laughton, H. H., Asst. to V. P., Southern, Traymore.
Lefaivre, W. E., P. A., D. & R. G. W., Traymore.
Lexington, J. B., Storekeeper, C. N. R., Chelsea.
Lillingren, A. H., Asst. P. A., G. N., Traymore.
Lowe, J. M., Storekeeper, N. W., Traymore.

Marceau, J. E., G. S., Rutland, Chalfonte.
Marshall, J. F., P. A., C. A., Traymore.
McAuliffe, J. W., Regn. Marker, Penna., Shelburne.
McCaughan, J. C., G. S., H. V., Chelsea.
McClothlin, J. H., G. S., Virginian, Chelsea.
McCloy, Edw. J., Storekeeper, Atl. City.
McKelligon, A. S., G. S., S. P., Traymore.
McMahon, F. J., Asst. G. S., N. Y. C., Breakers.
McMahon, J. E., G. S., C. St. P. M & O., Traymore.
Miller, R. F., G. S., U. P., Ambassador.
Mitchell, C. R., Storekeeper, Penna., Clarendon.
Moffitt, M. M., Asst. P. A., S. P., Ambassador.
Monroe, E. T., P. A., B. R. & P., New England.
Morehead, W. S., Asst. G. S., Penna., Dennis.
Morris, W. H., Asst. G. S., P. & R., New England.
Munster, A. W., P. A., B. & M., Chalfonte.

Nelson, B. F., Dist. Storekeeper, N. Y. C., Princess.
Nichols, J. H., G. S. K., N. Y. C. & St. L., Ambassador.

Oswalt, W. L., Asst. G. S., Penna., Iroquois

Pahler, P. J., Secy., A. C. & Y., Sterling.
Pearce, H. C., Dir. of P. & S., C. & O., Haddon Hall.
Peddle, C. R., P. A., Penna., Ritz-Carlton.
Peery, J. E., Travl. Storekeeper, S. P., Ambassador.
Petersen, C. B., Secy. to Gen. Supvr. Stores, U. P., Breakers.
Peterson, E. W., G. S., B. & Aroostook, Haddon Hall.
Phelps, W. G., Asst. P. A., Penna., Traymore.
Phillippe, B. P., Asst. P. A., Penna.
Porter, E. A., Storekeeper, M. P.
Prentice, A. L., Supvr. Scrap & Reclam., N. Y. C., Breakers.

Ray, H. E., G. S., A. T. & S. F., Shelburne.
Reed, C. B., G. S., P. & S., Chalfonte.
Reed, D. H., Storekeeper, Southern, Breakers.
Reed, F. D., V. P. & P. A., C. R. I. & P., Traymore.
Reynolds, D. E., Ch. Cl. to P. A., B. & L. E., Shelburne.
Reynolds, F. W., Storekeeper, B. & O., Ambassador.
Riach, W. S., Asst. G. S., A. T. & S. F., Traymore.
Rice, N. W., P. A., N. Y., N. H. & H., Traymore.
Robinson, G. H., P. A., O. W. R. & N., Marlborough.
Rost, C. H., G. S., C. R. I. & P., Traymore.

Shimer, F. B., Asst. Storekeeper, O. & W., Haddon Hall.
Simpson, W. I., Ch. Price Clerk, Penna.
Singleton, M. A., P. A., H. V., Chelsea.
Skinner, L. H., P. A., Southern, Ritz-Carlton.
Smith, A. F., Storekeeper, P. & R.
Smith, G. C., P. A., U. P., Marlborough.
Smith, H. M., Trav. Storekeeper, N. P., Haddon Hall.
Sprague, C. M., Storekeeper, Penna., St. James.
Starritt, W. A., P. A., C. C. & O., Chalfonte.
Steen, W. E., G. S., B. & O., Ritz-Carlton.
Stevens, C. E., Storekeeper, Penna., St. James.
Stokes, W. D., Asst. G. S., I. C., Dennis.
Sullivan J. L., Gen. Tran. S. K., U. P., Traymore.
Sutherland, L., G. S., P. & L. E., Ambassador.

Talbot, F J., Supt. Stores, Erie, Traymore.
Taylor, W. H., Storekeeper, Penna.
Thornley, E. W., Asst. P. A., B. & O., Haddon Hall.
Thorpe, E. G., G. S., L. I., Pennhurst.
Toye, E. D., G. S., C. N. R., Chelsea.
Trudeau, S. J., Asst. Fuel Agt., B. & M., Chalfonte.
Turner, F. C., Trav. Storekeeper, N. P., Haddon Hall.

Vail, Moses, G. S., N. Y. O. & W., Haddon Hall.
Vogt, W. F., G. S., Penna., Chalfonte.

Wade, J. W., G. S., N. & W., Traymore.
Walker, E. L., P. A., A. C. & Y., Sterling.
Walsh, C. E., Asst. P. A., Penna., Traymore.
Warren, H. E., Mgr. Pur. & Stores, G. M. & N., Ritz-Carlton.
Waterman, J. H., Supt. Timber Preservation, C. B. & Q., Chalfonte.
Wentzel, Geo. W., Asst. For. Stores Dept., P. & R.
White, C. S., P. A., N. Y. C., Ritz-Carlton.
Williams, C. B., P. A., C. of N. J., Traymore.
Williams, D. A., Asst. to P. A., B. & O., Ritz-Carlton.
Willse, J. F., Storekeeper, Penna.
Wonnel G., Storekeeper, Penna., Belmont.
Wood, L. B., G. S., S. P., Ambassador.
Wright, C. L., G. S., M. K. & T., Traymore.
Wright, G. S., G. S., E. J. & E., Chelsea.

Yeamans, C. W., Pur. & Supply Agt., C. & W. I., Dennis.
Young, C. D., Stores Inspr., Penna., Brighton.
Young, James, Gen. Motl. Agt., W. J. & S. S.
Young, N. H., Asst. Storekeeper, Penna.

Special Guests

Aberle, C., Asst. For., C. of N. J., Lyric.
Albert, C., For., C. of N. J., Conway.
Allison, Thomas Ausley, 7 Weeks Old Guest, Marlborough.
Anman, Wm. S., For. Tool, P. & R., Millis.
Anthony, Garrett S., For. Mach. P. & R.
Anthony, T. C., Asst. For., P. & R.
Apthorp, C. R., Asst. Gen. Tax Agt., N. Y. C., Dennis.
Askew, J. L., For. Paint, S. A. L., Traymore.

Bailey, R. W., Penna., Pennhurst.
Beahm, Peter, Machinist, Penna.
Beam, T. A., Mach. For., Penna.
Bechtel, Charles R., For., P. & R., Millers Cottage.
Beirne, G., For., C. of N. J., Terminal.
Bender, F. W., Sig. Eng., C. of N. J., Breakers.
Bennett, Robt., Haddon Hall.
Bennington, Wilson R.
Benson, I. N., Supvr. Motor Cars, N. Y. N. H. & H., Traymore.
Bergman, R. H., Insp., N. Y. C., Pennhurst.
Bertheimer, G. C., Cl., Penna.
Bigham, T. G., Insp., Penna.
Billig, Chester A., Asst. For., P. & R., Stanley.
Boyer, W. E., Draftsman, P. & R., New England.
Brand, F. L., For., Penna., Kingston.
Braucher, P. S., Foundry Mgr., P. & R., Traymore.
Bricker, Leo C., Asst. For., P. & R.
Brinson, C. E., Billing Inst., A. C. L., Fredonia.
Brommell, W. W.
Brown, Thomas, Asst. G. F., P. & R., Stevenson.
Burdette, J. C., Draftsman, B. & O., Louvan.
Burton, John K., Insp., N. Y. C., Pennhurst.

Carney, J. C., Machinist, A. C.
Carter, Wm., E. F., B. & A., Pennhurst.
Cash, O. C., Elberon.
Chaffee, F. S., Rutland, Brighton.
Cizek, R. Leslie.
Coller, Edward G., Machinist, P. & R.
Collins, W. F., Dyna. Eng., N. Y. C., Craig Hall.
Corbus, Frederick, S. M. P., I. C., Dennis.
Corbus, John, C. S. M. P., I. C., Dennis.
Coulston, W. J., Asst. For., C. of N. J., Craig Hall.
Coulter, A. F., G. C. F., Union, Morton.
Coyle, Edward J., Eng. Insp., P. & R., Silverton.
Crippen, F. L., N. Y. C., Traymore.
Crockett, F. J., Shop Insp., B. & O., Craig Hall.
Cullen, P., For., C. of N. J., Mt. Vernon.

Dalgarn, C. H., Machinist, W. J. & S. S.
Dally, Carl M., C. of N. J., Lexington.
Damberg, C. W., Res. Insp., N. Y., N. H. & H., Traymore.
Dampman, Fred.
Davies, B. F., Elect., P. & R., Elberon.
Demarest, G. L., Ch. Cl. M . P., C. of N. J., Chalfonte.
Dippery, Geo. A., For. Stores, P. & R.
Donnelly, W. J., Gang For., Penna.

Edmonds, C. G., Asst. R. H. F., B. & O., La Marne.
Elmore, D. R., Asst. to G. M., Fruit Growers Exp., Haddon Hall.
Emmerich, N. A., Machinist, B. & O., Craig Hall.
Eshelman, Walter W., Mach., P. & R.

Fair, J. M., Supvr., Penna.
Farley, L. M., For. Battery Plant, Wash. Termnl, Elwood.
Feehan, B., Asst. For., C. of N. J., Brady.
Fellows, P. S., Shop Insp., Penna.
Ferguson, N. J., Asst. Ch. Cl., W. J. & S. S.
Fidler, Jacob N., P. & R.
Fletcher, J., G. F., S. A. L., Strand.
Francis, Howard J., Asst. For., P. & R.
Freedman, E. A., Eng. Elec. Dept., N. Y. C.

Gaughan, Richard, For., C. of N. J., Healy.
Gaunt, J. D., Cl. Pur. Dept., Penna.
Geier, F. C., Spec. Insp., N. Y. C., Craig Hall.
Gibson, C. E., Cl., N. J. & S.
Glenn, J. Curtin, Stockman, S. K., Penna.
Glenn, Robert A.
Graeff, George, Asst. For., P. & R.
Gruber, Wayne, Asst. For., P. & R.

Haden, Jack S., Ambassador.
Hawbennestel, J. W., Elec. Eng., N. Y. C.
Hawksworth, W. H., For., Penna.
Hay, Sam., Asst. Ch. Cl., C. of N. J., Arlington.
Heal, H. E., Penna.
Hennick, Geo. L., Car For., B. & O., New England.

Hesser, H. M., Insp. Eff. Bureau, B. & O., Craig House.
Hoag, Winfield S., Machinist, P. & R.
Holder, J. W., Loco. Insp., I. C. C., Haddon Hall.
Holland, R. N., For., L. V., Shelburne.
Holmes, C. R., Ch. Cl. to Storekeeper, A. T. & S. F., Traymore.
Hritch, Michael, C. of N. J., Mt. Vernon.

Jacobson, C. A., Draftsman, N. Y. C.
Jardine, W. D., Knickerbocker.
Jones, L. R., For., C. of N. J., Blenheim.
Joseph, E., Asst. For., C. of N. J.

Keleher, Daniel, Penna
Keliher, Edw. J., Ch. Cl. Storekeeper, Atl. City.
Kelley, Robert G., Penna.
Kellogg, H. B., Penna.
Kelly, Joe, Dennis.
Kimmell, Chester F., Asst. G. S., P. & S., Chalfonte.
Klein, A. W., For. Mach. Shop, Penna., Devonshire.
Kleinhans, F. J., Sec., Interstate Tank Car Corp., Strand.
Knoke, H. C., B. & O.

Lamb, Wm. M., For., Penna.
Laucks, Harry M., For. Stores, P. & R.
Lavenburg, Wm. H., Engineman, P. & R.
Lawson, A. B., Draftsman, B. & O., Chatham.
Lea, C. C., Asst. For., C. of N. J., Brady.
Leatherbury, A. P., Ch. Cl. Lumber Agent, B. & O., Clarendon.
Lee, F. H., Jr., B. & O., Knickerbocker.
Leppington, W., For., C. of N. J., New Brady.
Litz, Dr. V., Dir. of the A. Borsig Co., Ambassador.
Lynch, George, Ch. Joint Car Insp., All Lines, Bouvier.

MacAlpine, John D., Trav. Acct., N. Y. C.
Madara, Amos C., Atl. City.
Madara, Wm. C., Asst. For., P. & R., Roberts.
McAllister, M. M., For., N. Y. C., Marlborough.
McGoldrick, J. E., P. & R.
McHugh, T. J., B. & O., Beaumont.
McIntyre, F. D., Ch. Cl. to S. M. P., M. C.
McMahon, F. L., Draftsman, N Y. C
McReynolds, E. H., Asst. to Pres., M. P., Marlborough.
Mangans, E. H., Machinist, Penna.
Mellon, J. F., Cl. S. M. P., Penna.
Melvin, Frank E., Jr., Ch. Cl., F. E. C., Ambassador.
Mengel, William E., For. Stores, P. & R.
Merson, J. E., Tool For., B. & O., Brighton.
Mettinger, E. E., Cl., W. J. & S. S.
Miller, A., Asst. For., C. of N. J.
Miller, E. G., Asst. For., P. & R., Thompson House.
Miller, M. P., Mat'l. Insp., N. Y. C.
Mills, Walter, Chalfonte.
Morris, W. H., Jr., New England.
Mulrooney, A. J., For., Penna.

Neihert, Walter A., Asst. For., P. & R., Millers Cottage.
Newgirg, W. H., Shop. For., B. & O.
Nunn, W. J., Elect. Insp., Penna.

O'Connor, A. J., Draftsman, N. Y. C., Chalfonte.
O'Connor, Charles J., Ry. Postal Cl.

Palmer, Harry W., Machinist, A. C.
Palmer, J. E., Commander, U. S. N.
Parker, Franklin.
Parker, Robert, Car. Insp., P. & R.
Peters, J. H. D., Painter, B. & O.
Pfahler, Howard F., Marlborough.
Powell, N. M., Mech. Supt., P. R. T., Traymore.
Pratt, H. A., Acct., Stores Dept., N. & W., Traymore.
Price, C. W., Elec. Car Ltg. Supvr., B. & O.
Price, W. P., Car For., Penna.
Quinn, J. A., W. J. & S. S.
Quinn, J. F., W. J. & S. S.

Redline, R. H., Gang For., Penna., Elbeson.
Reinhart, E. J., For., L. V., Shelburne.
Reiss, Guy, Asst. For., P. & R., Albemarle.
Reynolds, A. T., Draftsman, C. of N. J., Worthington.
Reusswig, E. J., Ch. Cl., N. Y. C., Shelburne.
Rhoads, C. W., Ch. Cl. Pur. Dept., C. of N. J.
Rischman, John, Penna., Cresson Inn.
Rissmiller, Marks E., For. Stores, P. & R.
Robey, A. A., Southern.

Schroyer, C. H., Adams Express Co., Sterling.
Schweitzer, Edgar, Fuel Eng., Lehigh Coal Co., New England.
Scott, Robt. F., For. Blacksmith, P. & R., Elberon.
Seeberg, Fred B., Bothwell.
Seff, Manuel, B. & O., Shelburne.
Shaeffer, R. E., B. & O.
Sheehan, J. J., For., N. & W., Traymore.
Shirley, John A., Asst. Ch. Insp. of Loco., I. C. C., Shelburne.
Spangler, C. F., R. H. F., P. & R.
Spengler, R. M., Spec. App., Penna.
Smith, A. J.
Smith, J. T., Penna.
Smith, R. N., Fireman, P. & R.
Snyder, H. M., B. & O., Arlington.
Snyder, Rudolph, For., Penna.
Spencer, J. L., C. C. & O., Chalfonte.
Sprague, Wm. R., Penna., St. James.
Starritt, W. A., Jr., C. C. & O., Chalfonte.
Stenger, Andrew, Penna.
Stoner, Albert L., Asst. For., P. & R.
Straub, C. F., P. & R., Lexington.
Stromberg, J. E., Matl. Insp., N. Y. C., Shelburne.
Stroner, Geo., Tool Supvr., C. & O., Ritz-Carlton.
Swartwood, Wm., Asst. For., C. of N. J., Healy.

Tangye, W. A., B. & O.
Taylor, Robt. L., Jr., B. & O., Kentucky.
Tebbetts, G. E., Gen. Supvr. B. & B., C. & O.
Thomas, John A., Asst. For., P. & R., Roberts.
Thompson, Frederick V., For., P. & R.
Thompson, Geo. W., For. Atl. City & Shore.
Thompson, John S., Asst. For., P. & R.
Thwaites, D. G., Penna.
Trudell, Fred., Frt. Car For., D. L. & W.
Trump, J. Wm., Asst. For., P. & R.

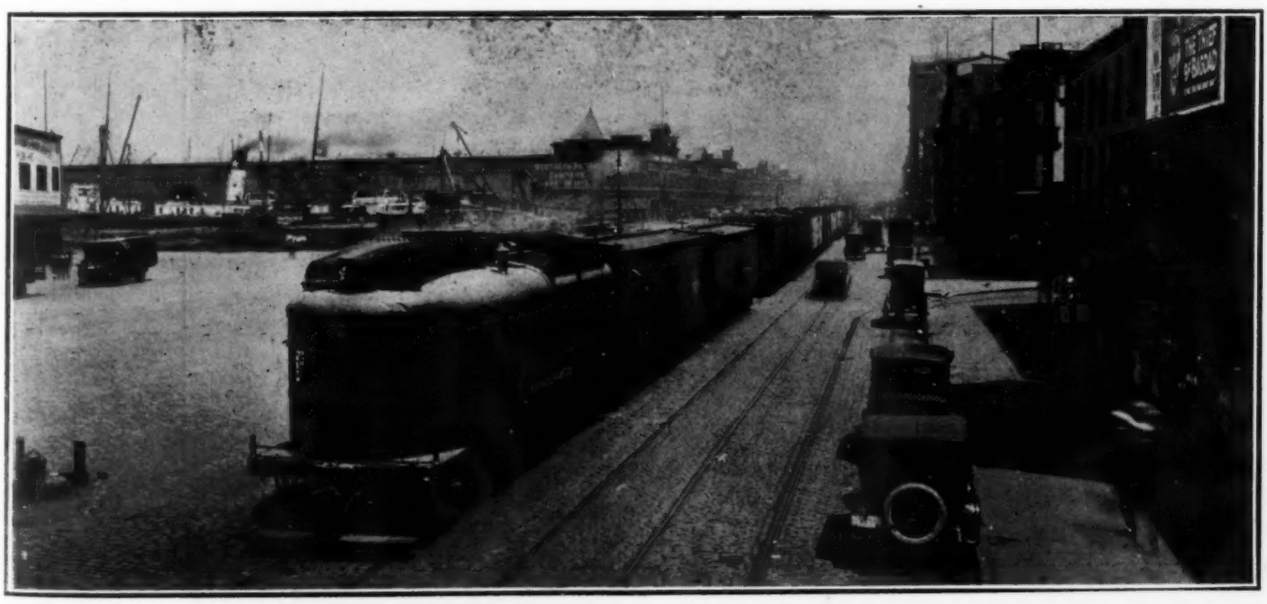
VanBuskirk, Edw. J., Clerk, L. I., Wiltshire.
Veale, F. R., Supt., Postal Tel., Dennis.
Vessey, Fred, Machinist, St. L. & S. F., Continental.
Voight, J. J., Penna.

Walls, W. H., Genl. Off. Mgr., U. S. R. A., Marlborough.
Werts, Jas. R., Mach. Shop For., P. & R.
Westall, W. T., Spec. Insp., N. Y. C., Traymore.
Whalen, M. W., Machinist, B. & O.
White, E., C. of N. J., Lyric.
White, H. M., Elect., Penna.
White, W. K., Ch. Cl. S. M., N. Y. C., Shelburne.
Wigney, H. M., Genl. Supt. Arans., N. Y. C., Ambassador.
Wilson, W. H., Draftsman, B. & O., Louvan.
Woodrow, H. H., For., Phila. Rapid Tran., Traymore.
Wynn, F. S., V. P., Southern, Brighton.

Yarnall, George C., For., C. of N. J., Lyrick.

Zimmerman, H. C., Ord. Eng., U. S. A., Colonial.
Zimmerman, H. R., Asst. For., P. & R., Stanley.

* * *



Diesel-Electric Locomotive Built by Ingersoll-Rand and General Electric Companies Used in New York Switching Service by the New York Central

Transportation Committee

First Row—Bottom—left to right—Ralph Brown, The Curtain Supply Company; R. R. Wells, Hunt Spiller Mfg. Corp.; Geo. R. Boyce, A. M. Castle & Company; K. A. Milar, Milar Clinch Company; Geo. Murphy, Magnus Metal Company; A. L. McNeill, Chairman, Central Electric Company; Geo. C. Hannaway, Vice-Chairman, National Refining Company; H. T. Rieck, Illinois Malleable Iron Company; W. A. Houston, Joseph Dickson Crucible Company; C. L. Butler, Detroit Lubricator Company; E. F. Gladwell, Buffalo Break Beam Company; E. C. Daniels, West Disinfecting Company and L. F. Flannagan, Detroit Graphite Company.

Second Row—From Bottom—left to right—E. L. Georger, Pratt-Lambert Company; Frank Flinn, Griffin Wheel Company; L. F. Theurer, Pittsburgh Plate Glass Company; J. D. Underhill, Okonite Company; W. B. Ross, Edmonds S. Woods Company; R. R. Lally, Globe Steel Tubes Company; R. R. Porterfield, The Superheater Company; Clyde Campbell, Chicago Pneumatic Tool Company; J. H. Trent, H. W. Johns Manville Company; A. C. Andresen, Chicago Pneumatic Tool Company; John Roberts, General Electric Company; Clif Beaumont, Boss Nut Company; A. W. Clokey, American Arch Company and T. F. Williams, Chicago Cleveland Car Roofing Company.

Third Row—Top—left to right—W. F. Bauer, Edison Storage Battery Company; Chas. L. Heater, American Steel Foundrys; C. H. Friday, Illinois Steel Company; E. E. Thulen, Duff Jack Mfg. Company; Geo. J. Lawrence, J. B. Ford Company; K. M. Hamilton, Bettendorf Company and W. S. Noble, Ruberoid Company.

R. S. M. A. Annual Meeting

THE ANNUAL meeting of the Railway Supply Manufacturers' Association was called to order by President Beaver promptly at 12 o'clock on Saturday. The secretary read a considerable list of names of members of the association who had passed away since the last meeting, two years ago. The minutes of the meeting of June 17, 1922, were read and approved.

President Beaver took occasion in his brief address to touch upon the most excellent cooperation which he had received in the course of his work, especially from John Purcell, chairman of Division V, and U. K. Hall, Chairman of Division VI, who were largely responsible for the success of the present convention and exhibit. He also mentioned especially the cooperation which he had received from the Mayor and city officials and the Hotel Men's Association of Atlantic City, and last but not least, the efficiency of the secretary, John D. Conway, without whose knowledge, skill and experience the present exhibit would not have been possible.

He then called upon the chairmen of the various subcommittees, some of whom responded with brief reports. Chairman F. H. Smith of the Enrollment Committee made the interesting announcement that in comparison with the largest previous exhibit there was this year occupied several thousand more square feet of exhibit space with 40 more exhibitors; the registration up to 5 p. m. Saturday showed a total attendance 25 per cent. greater than at the corresponding time in 1922. The attendance of railroad men was 41 per cent. greater than two years ago.

The president announced that he had received from Dan Brady an interesting document, being a folder showing details of arrangements of the supplymen for the 1884 convention—40 years ago—and dated May 15th, 1884.

Chairman George L. Morton, of the By-Laws committee, offered a resolution that in view of the numerous amendments that have been made to the by-laws since they were last printed in 1912 the secretary should be instructed to codify them by rewriting and embodying those amendments which had been passed in recent years, changing also the various names corresponding with the changes which have been made in the mechanical associations. This resolution was adopted subject to the approval by the Executive Committee and final adoption by the association.

C. C. Pierce, of the General Electric Company, believed it was a fitting time for someone to sound an optimistic note and that the present exhibition afforder a favorable opportunity for so doing. He believed that this was the greatest industrial trade affair that had even been held, and that it marked one of the greatest eras in the field of transportation. He was interested in both steam and electric transportation and believed that the progress that had been made in the steam railway field, as exemplified by these exhibitions, would be of the greatest value in the electric transportation age which is now coming on.

His Honor, the Mayor, expressed his satisfaction and that of the people of Atlantic City that the associations had decided to hold their annual conventions at Atlantic city this year. He was sorry about the weather, but said that could not be helped.

The meeting then proceeded to the election of district officers, with the following results:

District No. 3 (Pennsylvania), Charles H. Gayetty, Quaker City Rubber Company, for two years, and S. G. Down, Westinghouse Air Brake Company, for three years.

District No. 4 (Ohio, Indiana and Michigan), George A. Cooper, Frost Railway Supply Company, Detroit, Mich., for three years.

District No. 5 (Illinois), H. E. Daniels, West Disinfecting Company, for three years.

District No. 6 (Delaware, Maryland, District of Columbia, Virginia, West Virginia, North Carolina, Georgia, Florida, Alabama, Mississippi, Kentucky and Tennessee), D. L. Eubank, Galena Signal Oil Company, Atlanta, Ga., for three years.

District No. 8 (Canada), Arthur Allan, The Holden Company, Ltd., Montreal.

The Nominating Committee reported for president, Leroy S. Wright, of the National Malleable Steel Castings Company, Chicago, and for vice-president, W. H. S. Bateman, of the Parkesburg Iron Company and Champion Rivet Company, Philadelphia. These officers were unanimously elected, and after their induction into office and brief addresses of appreciation of the honor conferred upon them by their associates, the meeting was declared adjourned.

Enrollment

THE enrollment booth will be open today from 9:00 A. M. to 1:00 P. M.; 2:00 P. M. to 6:00 P. M., and 8:00 P. M. to 9:00 P. M.

Special Trains Homeward Bound

THE PENNSYLVANIA RAILROAD has arranged for special trains for convention attendants returning to their homes. The train for New York, composed entirely of Pullman parlor cars will leave Atlantic City on Wednesday, June 18, at 3 p. m. Eastern Standard time, (4 p. m. Daylight saving time). The train for Chicago made up of Pullman special sleeping cars will leave Atlantic City on Wednesday, June 18, at 3:50 p. m. Eastern Standard time, or 4:50 p. m. Daylight saving time, arriving at Chicago at 3 p. m. Daylight saving time, the following day.

Lost and Found

LOST—Lady's overnight case, marked with initials H. P. G. Return, if found, to J. P. Gowing, care of the *Daily Railway Age*, Booth 1.

Lost—Oxford bi-focal glasses with dark shell rim, between the Pier and the Haddon Hall Hotel. Return to the *Daily Railway Age*.

Lost—A bamboo cane with gold band, initials J. E. B. on band. Return to J. E. Buker, Vapor Car Heating Company, Booth 210.

Lost—Gray top coat (Perry's, Philadelphia). Return to Mr. Faust at Booth 73, Exhibition Hall.

Lost—A Brownie camera on Friday afternoon. Notify J. L. Minick, assistant engineer, Pennsylvania Railroad, Altoona, Pa.

Lost—Following arrival at Atlantic City, one new straw hat, the property of A. LaMar, of Chicago. Finder will please return to the *Daily Railway Age*.

Lost—Light brown cravanet raincoat. Left in Chambersburg Engineering Company booth. Return to the *Daily Railway Age*.

Lost—Annual pass, Philadelphia & Reading, in the name of Curtis C. Guest, car inspector. Return to Enrollment Booth.

Found—A camera and a lady's purse. Call at the office of the secretary-treasurer of the R. S. M. A.

Welding Men to Meet Tomorrow

THE MEETING of the welding men announced for this afternoon has been postponed until tomorrow. Further announcement including the time and the place will appear in the *Daily* on Tuesday morning.

Saturday's Entertainment

SATURDAY'S ENTERTAINMENT features included the usual orchestra concert in the Entrance Hall of the pier at 10:30 a. m., concert and impromptu dancing at 3:30 p. m., and at 9:00 p. m. informal dancing in the Ball Room with a special musical revue arranged by Tulsa Lee of New York. Owing to the absence of S. Worcester Sargent, chairman of the sub-committee, the floor was in charge of H. A. Varney, assisted by other members of the comittmee, as follows: C. L. Brown, Oscar C. Hayward, Philip L. Maury, Leslie R. Pyle, C. R. Naylor, J. R. Wetherald and Carter P. Whitcomb.

"Hell-Maria Dawes"

EDWARD P. WELLES, C. H. Besley Co. of Chicago, feels with other good Americans some degree of satisfaction in the nomination of "Charley" Dawes as vice-president of the United States and particularly so for the reason that they live right around the corner from each other in Evanston. Mr. Welles claims no special acquaintance with Mr. Dawes, but knows some of the things that do not always get on the front page of the daily paper. We all know the "Hell-Maria" feature of Mr. Dawes career, but so far from being a profane man this expresion and the others that went with it were used for the purpose of getting across the matter under consideration and their use was simply an examplification of a good knowledge of human nature—especially newspaper human nature—on the part of a man who wanted the subject-matter of his cause to come into the limelight even at the expense of carrying it there himself.

Contrary, perhaps, to a widely prevalent belief, Mr. Dawes is a very modest man, not at all given to exploiting the deeds which indicate the real character of the man—as, for example, the adoption into his family of children who otherwise would not have had homes. During the war and under what would have been to most men insuperable difficulties, he kept a diary—"no day without a line"—and the overwhelming intensity of these days in France and the rapidity with which one series of events followed another, was, on the basis of this material, made the basis of his letters to his mother at home.

Perhaps the real character of the man is depicted as well as it could be in a word or two by his frequent reference "if Rufus couuld have been here." This reference is to the subject of the Rufus C. Dawes memorial in Chicago. It means more as to the real man who has generations of the best of our New England ancestary behind him, as has his leader on the presidential ticket, than the "Hell-Maria!" and the blackpipe characterizations which create more first page headlines. Another thing—Mr. Dawes will not be a "Stoughton bottle" in the second Coolidge administration.

Cornell Dinner Tonight

CORNELL MEN at the convention are planning the usual get-together dinner, tonight. Because the regular reunions at Ithaca occur during the convention period, this is the only chance alumni who are here have of getting together. G. S. Edmonds, superintendent of motive power, Delaware & Hudson, has made the necessary arrangements for tonight at the Traymore and it is up to all Cornell men of whatever year to leave their names with A. F. Stuebing, Bradford Corp., at Booth 554 in order that proper provision may be made for their entertainment. In previous years this has been one of the best attended alumni gatherings held.

Remington Service

THE REMINGTON TYPEWRITER COMPANY has introduced an innovation this year, which has been taken advantage of by many of the convention attendants and is greatly appreciated by them. It has several telephone pay stations in its booth and a number of young ladies to take care of correspondence for the visitors.

Sunday Sacred Concert

ON SUNDAY at 3:30 p. m. the Marlborough-Blenheim orchestra gave a sacred concert in the music room of the Marlborough-Blenheim, with artists Rass Eriksen, baritone, and Maryrose Walsh, soprano. In addition to the artists named particularly pleasing numbers were filled by Boris Koutzen, violin, Leo Sachs, 'cello and the Marlborough-Blenheim quartet. Rudolf Hildemann accompanied on the piano and the whole was under the direction of Leo Sachs, musical director.

The program, which was enjoyed by a large audience, follows:

PROGRAM

Hungarian Rhapsody No. 2 ..... *Liszt*
Marlborough-Blenheim Quartet

Even Bravest Heart May Swell—Faust ..... *Gounod*
Vocal Solo—Rass Eriksen

Gypsy Airs ..... *Sarasate*
Violin Solo—Boris Koutzen

Vissi D'Arte Vissy D'Amore—Tosca ..... *Puccini*
Vocal Solo—Maryrose Walsh

Hungarian Rhapsody ..... *Popper*
Cello Solo—Leo Sachs

a. Little Mother of Mine ..... *Burleigh*
b. "Vale" Farewell ..... *Russel*
Vocal Solo—Rass Eriksen

Cathedral Chimes ..... *Arnold*
Marlborough-Blenheim Quartet

a. Ave Maria ..... *Gounod*
b. A Dream ..... *Grieg*
Vocal Solo—Maryrose Walsh

Roses of Picardy ..... *Wood*
Duet—Maryrose Walsh and Rass Eriksen

Deceased Members of R. S. M. A.

IMPRESSIVENESS WAS added to the meeting of the R. S. M. A. on Saturday morning by the request of President Beaver that members stand while the secretary read the list of members who had passed on since the last meeting two years ago. The list as it now stands follows:

Stephen C. Mason, secretary, The McConway & Torley Co., Pittsburgh, Pa., December 12, 1923.

J. H. Setchell, formerly secretary and president, American Railway Master Mechanics' Association, sales manager, Jerome & Elliott, Chicago, December 13, 1923.

Willard A. Smith, editor and publisher, Railway Review, Chicago, December 29, 1923.

Waldo H. Marshall, chairman of board and president, Consolidated Machine Tool Corp., New York, November 29, 1923.

John E. Fairbanks, secretary and treasurer, American Railway Association, New York, February 24, 1924.

John Meeker High, manager of sales, railroad department, The Pantasote Co., Inc., New York. April 24, 1924.

Leigh Best, senior vice-president, American Locomotive Co., New York, April 27, 1924.

John Emory Meek, vice-president, Johns-Manville Co., New York, May 24, 1924.

John Wesley Hathaway, Union Draft Gear Co., Chicago, April 23, 1924.

Scott R. Hayes, vice-president, New York Air Brake Co., New York, May 6, 1923.

James J. McCarthy, president, Chicago-Cleveland Car Roofing Co., Chicago, November 25, 1922.

Fred R. Cooper, Gold Car Heating & Lighting Co., New Work, May 10, 1924.

McBarmma Golf Tournament

THE McBARMMA GOLF CLUB held its annual tournament at the Seaview Country Club on Saturday. The championship was won by W. L. Conwell with a gross score of 79. James G. Bateman and C. C. Hubbell tied for low net in the morning, with 73, and in the play-off the prize was won by Mr. Bateman.

In the handicap play in the afternoon first prize in Class A was won by E. W. Van Houten and second prize by Samuel O. Dunn. In Class B first prize was won by Robert F. Carr and second prize by C. R. Ellicott. In Class C first prize was won by H. C. Manchester and second prize by C. C. Hubbell. The Carr cup (donated by R. F. Carr) for low net in the afternoon went to H. C. Manchester. The Sargent "Luck Cup," given by George H. Sargent, was awarded to W. J. Tollerton, who succeeded in accomplishing the feat of getting two 2's on the thirteenth hole. A prize of a box of cigars, contributed by James McNaughton, for the winner of the tournament was claimed by W. L. Conwell.

The election of officers resulted in the selection of C. L. Bardo, general manager of the New Haven, as president; James G. Bateman as vice-president, and Frederick B. Green as secretary-treasurer.

Clement F. Street, long secretary-treasurer, was absent, a fact which was greatly regretted.

Visible Records in Enrollment Booth

AT THE suggestion of the Chairman of the Enrollment Committee, Franklin H. Smith, the Rand visible file is being used for the first time in the enrollment booth. In this file the name, badge number, company represented, home address, and hotel and room number in Atlantic City are visibly displayed so that any name can be instantly found. The file has met with the approval of all the members of the enrollment committee. Its operation is as follows:

The delegates' names are typewritten on the bottom edge of the card and it is inserted in a pocket with a transparent fiberloid tip. These pockets are then placed in upright panels, overlapping each other like shingles on a roof. Every name in the file is visible.

The Philadelphia office of the Rand Company, Inc., is 807 Chestnut Street.

Conventionalities

N. M. Rice, general purchasing agent of the New York New Haven & Hartford, was an early comer to the P. & S. meeting, arriving on Friday evening. Mr. Rice is accompanied by his daughter, Miss Anna Burr Rice and a guest.

W. H. Sauvage, representing the Gould Coupler Co., is attending his 20th convention; the novelty of it for him is the fact that he has brought with him his bride of a few weeks who was formerly Miss Carolyn Phillips, of Corning, N. Y.

Watch out for No. 11000—the youngest visitor on the pier. Thomas Ausley Allison, the seven-weeks'-old son of Major and Mrs. Bill Allison, is here being properly initiated to the activities of the convention. As a prospective supplyman he certainly is receiving an earty start.

The testing machine which overlooks the "Conventionalities" desk of the *Daily*, is not so placed for the use of the editorial department. It is an important feature of the exhibit of the Pittsburgh Testing Laboratory next door to the west.

The Enrollment Committee under the leadership of its chairman, Franklin H. Smith, made its customary "chain gang" parade through the exhibit space on Saturday morning accompanied by the committee mascot. The gang wore its well-known collective smile which it had been able to retain for quite some time after leaving the photographer's studio.

Frank C. Pickard, formerly master mechanic of the D. L. & W. at Buffalo, is attending the convention this year in the capacity of a supply man. He left the Lackawanna last December to go with the Talmage Manufacturing Company as a vice-president. A few weeks ago, however, he made another change and is now works manager for the Standard Stoker Company at Erie, Pa.

General Charles Miller, president of the Lake Erie, Franklin & Clarion Railroad and of the Franklin Railway Oil Co., who has been a convention attendant for many years, and whose name should be familiar to every railroad man who uses lubricating oils, spent Wednesday and Thursday with friends at Atlantic City as a fitting preparation for the celebration of his 81st birthday which occurred on Sunday.

J. M. Hopkinson, who is proud of the railway of which he is superintendent of motive power, the Savannah & Atlanta, because, as he says, while it may not be as long as a lot of others in the country it is just as wide, has submitted the following definition for inclusion in the new edition of the Locomotive Cyclopedia: "MAIN ROD-A rod connecting two revolving parts which fly together." Mr. Hopkinson has the assurance of the editor that the definition will receive the consideration it deserves.

Albert Waycott, the first president of what is now the Railway Supply Manufacturers' Association, accompanied by Harry W. Frost, who was the second to hold that honor, visited at the *Daily* booth on Saturday afternoon. Since disposing of his interests in the Damascus Brake Beam Co., and other companies on account of his health some years ago, Mr. Waycott has given up all active business connection. These two men, with a few others, most of whom are not now with us, are entitled to much of the credit for laying the foundation upon which a substantial structure has been erected.

Railroad Shop Equipment and Machine Tools

New Developments in Shop Equipment and Machinery Among the Exhibits

THE RAILROADS, in laying out new shops and engine terminals and in the modernization of existing facilities, are concentrating upon the installation of equipment which will enable them to reduce to a minimum the cost of maintenance and operation of cars and locomotives. The requirements of heavy production work and the institution of central production shops by a number of the larger railroads have created a demand for new types, which is influencing recent machine tool design. This is clearly evidenced by the new equipment shown this year, which makes up what is generally conceded to be the most elaborate display of its kind ever presented.

Railroad men, as they pass around among the exhibits in Machinery Hall, can hardly fail to be impressed with the fact that the machine tool builders and companies producing shop equipment have succeeded in developing some remarkably efficient devices. Most of the new equipment brought out during the past year and now being exhibited was described in the June *Railway Mechanical Engineer*. For the benefit of those who receive copies of the *Daily Railway Age*, the following brief comments on points of special interest in connection with this equipment are presented here.

Dreses Six-Foot Radial Drill Press

The Dreses Machine Tool Company, Cincinnati, Ohio, is exhibiting a six-foot radial drill press described on pages 374 and 375 of the June *Railway Mechanical Engineer*, embodying many improved features of design. The designer has developed a number of safety features such as the entirely enclosed gearing, fool-proof elevating mechanism, simplified lubrication and a large factor of safety in the details.

The head is entirely enclosed and is mounted on three bearings, two in front and one back of the arm, thus distributing the torsional strain when drilling over the entire arm. The lubrication of the head is obtained by means of a combination of splash and force feed. The forward and reverse gears and frictions run in a separate oil bath. The thrust of the large diameter spindle is taken on two ball bearings. There are eleven annular and three thrust ball bearings used in the head construction. There are four changes of speed in the head which, combined with eight changes in the feed box, gives 32 spindle speeds. Fifteen feeds for the spindle are available, five of which are top leads for 8, 11½, 14, 18 and 27 threads to the inch. The completely enclosed speed box is of the cone and tumbler type, operated by a single lever. It is clearly indexed and the speeds are arranged in successive progression, thus eliminating the necessity of the operator observing the index whenever he wishes to increase or diminish the speed.

Betts Car Wheel Boring Machine

The car wheel boring machine described on page 385 of the June *Railway Mechanical Engineer* is being exhibited at the booth of the Betts Machine Works of the Consolidated Machine Tool Corporation of America. This machine is equipped with double hoists of the pneumatic type, which are located on each side of the machine. These hoists operate independently of each other, and swing to the center of the table. This arrangement greatly facilitates the loading and unloading of wheels, since it permits handling from both sides of the machine.

The main drive is by means of a 20-hp. adjustable speed D. C. motor—all table speeds are obtained electrically through the motor. The motor is operated by a reversible automatic controller with a push-button station placed conveniently for the operator. Starting and stopping the table and opening the chuck jaws are all accomplished instantly by means of a push-button control.

A suitable range of feeds for roughing and finishing is provided. They are obtained through sliding steel gears, which may be changed while the machine is running. The feeds are controlled by two conveniently located levers which permit the operator to change from the roughing to the finishing feed as soon as the roughing cutter has cleared the work.

Underwood Portable Boring Bar

One of the recent developments on exhibition is the portable boring bar manufactured by the H. B. Underwood Corporation, Philadelphia, Pa. This device, which is particularly suitable for reboring the cylinders of locomotive air compressors, was described on page 387 of the June *Railway Mechanical Engineer*. The power for driving this equipment is obtained from an air motor, the driving spindle of which is provided with a Morse taper shank to fit the motor. This spindle drives a pinion which meshes with a gear that is keyed to the boring bar.

In applying this equipment, the pilot guide is screwed on the stuffing-box of the cylinder the bar is placed in the cylinder, and the clamping ring is securely fastened to the top flange by studs and nuts. Any inaccuracy in the position of the studs can be quickly compensated for by means of four thumb-screws and the bar set in alignment. The tool is adjusted in the cutter head by simply tightening a collar screw and, if desired, it may be as readily released when the cutter head is at the lower end of the cylinder. In boring the cylinders, the use of calipers is entirely dispensed with. A gage furnished with each bar provides a simple method of setting the tool to the required position.

The weight of the equipment having a capacity for boring cylinders from 8½ in. to 11 in. in diameter and of 12-in. stroke, is about 240 lb., not including the weight of the motor.

Pneumatic Motor and Tool Grinder

The Cleveland Pneumatic Tool Company, Cleveland, Ohio, has on exhibition a recently designed air motor and portable grinder which were described on page 386 of the June *Railway Mechanical Engineer*. The air motor is of the four-cylinder type, having four single acting pistons connected to opposite wrists of a double-throw crank. The crank wrists, which are grooved, hardened and ground, act as an inner ball race and the connecting rods as the outer ball race. The pistons are screwed into piston sockets. The main valves, of the

slide piston type, are operated by eccentrics on the crank shaft, and are placed between each set of cylinders. Reduction of bearing friction and quick air delivery have enabled the development of a high speed motor.

The portable grinder embodies the same principles of design as the air motor. It is furnished with any one of four types of throttle handles. The grinder weights 12 lb., and will drive a 6-in. emery wheel at a speed of 4,600 r.p.m.

Foster Bolt Turning Machine

The Walter H. Foster Company, New York, is exhibiting a bolt turning machine and its auxiliary centering device which was described in detail in the June *Railway Mechanical Engineer* on page 382. The machine will turn bolts on centers from forged blanks, and the cutter head is quickly adjustable to all sizes within the range of the machine. The bolts are held in the cutterhead on centers, with the driving spindle and floating chuck below and the cutterhead feeding down over the bolt blank. The tailstock which carries the top center is adjustable for the entire length of the guides. The tailstock center and spindle is controlled by means of a wedge which, with a single horizontal motion, moves the center into position and holds it.

To cheaply and accurately center these bolts, an auxiliary machine was developed which would center both ends at the same time, point the end and face under the head. The centering is done by two spindles with a standard centering tool in each, guided in bushings. This machine will operate on bolts from 6 in. to 25 in. long. To change from one diameter to another, it is necessary only to change the driver, which is held on by two spring clamps, and adjust slightly the facing and pointing tools for the new size. The machine is mounted on a heavy bed, which in turn is mounted on a large chip pan. A compound coolant pump and tank are provided.

General Electric Portable Arc Welder

The General Electric Company, Schenectady, N. Y., is exhibiting the portable electric arc welder, described on page 380 of the June *Railway Mechanical Engineer*. This welder is a two-unit set, consisting of a motor and a generator. It can be used with any commercial size of metallic electrodes, from 1-16 in. to ¼ in. in diameter. The generator voltage can be adjusted to suit the character of the work. High voltage for complete penetration on heavy work and low voltage to prevent burning through on light work are thus secured at will. Any value of current between 75 and 300 amperes can be obtained in a large unmber of steps between these units.

The complete set has three bearings, the two units being close-coupled by a solid flange coupling. All parts, including the generator, motor, generator control panel, motor starter and stabilizing reactor, are mounted on a welded structural steel base of rigid construction and light weight. The assembled unit is about 63 in. long, 29 in. wide and 47 in. high, and weighs about 1,600 lbs.

Blacksmith Forge with Pressed Steel Hearth

The Buffalo Forge Company, Buffalo, N. Y., is exhibiting a blacksmith forge which was described fully in the June *Railway Mechanical Engineer* on page 376. The new feature in the design is the one-piece pressed steel hearth, which takes the place of the three-piece construction formerly used. The water box is 24 in. by 10 in., and is also of pressed steel construction. A further advantage of the pressed steel construction is the use of one-gage metal throughout. A crimped edge has been substituted for the reinforcing ring of the fire pot, the legs are of angle iron and flared at the bottom, while the face pot is cast iron.

The gear ratio for this forge is 47½ to 1. The blower crank on any of the various types may be turned backward or forward with equal blast. The fan cases are so designed that all excessive churning is avoided.

Newton Crank Planer

The Newton Machine Tool Works of the Consolidated Machine Tool Corporation of America, Philadelphia, Pa., are exhibiting a 40-in. stroke crank planing machine which was described on page 392 of the June *Railway Mechanical Engineer*. This machine was designed primarily for machining crossheads, driving boxes, shoes and wedges, rod and driving box brasses and other short-stroke work which would otherwise have to be done on a larger machine. It combines the features of a planing machine with an added desirable feature of the crank shaper; namely, a fixed stroke at varying speeds which are of sufficiently wide range for the machining of bronze, iron or steel. The table travel is controlled by a brake and clutch, and stroke adjustment is provided. Enclosed helical gears, running in oil, drive the table. A strengthened cross-rail carries the tool slide and is adjusted by power through the table lifting screws. The vertical movement of the tool slide is above and below the cross-rail, so that the overhang is reduced to a minimum. All driving bearings are bushed and all gears and moving parts are enclosed. The drive is by a 10-hp. 1,200 r.p.m. motor or single pulley and change box.

Potter & Johnston Chucking and Turning Machine

An automatic checking and turning machine designed to produce duplicate parts is exhibited by the Potter & Johnston Machine Company, Pantucket, R. I. It was described in detail in the June *Railway Mechanical Engineer*. The base is of a heavy box section with wide ways. The 5¾ in. diameter spindle runs in a bath of oil, and all the hearings are flood lubricators.

There are 16 changes of speed between nine and 185 r.p.m., which are arranged in four sets of four automatic changes. There are 24 feeds in geometric progression from .007 to .250 in. per spindle revolution. The feeds are independent of the high, constant speed for idle movements of the turret-slide while withdrawing, revolving and advancing the tools to the point of cutting. The slide cam drum is located directly under the cross slide, and the cam roll studs are located in the cross slide, thus making direct connection between the two. The turret slide has 10-in. longitudinal adjustment by means of a hand crank and screw, and is clamped securely in any desired position by three bolts, besides being located by the adjusting screw. The turret slide has 18-in. travel, and may be equipped with either mechanical or air control.

Five New Yale & Towne Trucks

A series of five industrial trucks is being exhibited by the Yale & Towne Manufacturing Company, Stamford, Conn. This series was described on page 305, of the May number of the *Railway Mechanical Engineer*. Models K-20 and K-21, which are designed to meet the general requirements of intraplant movement, will handle miscellaneous units of material which may be placed on the platform by hand, hoist, or overhead crane service. The model K-21 truck is equipped with a wider platform than the K-20, but in other respects the two are similar in design and construction.

The model K-22 is a self-loading transportation unit

in which are combined the advantages of high and low lifting. It may be used to lift loaded skids from the floor, transport them to a given place and raise them to a higher level, thereby facilitating stacking or for tiering in a storeroom or freight car. Model K-23 is a general utility truck, designed with a low plaform to reduce heavy lifting to a minimum. Model K-24 is a combined tractor and trailor, designed for operating in congested spaces.

With the exception of model K-24, the various parts of these trucks are interchangeable with each other. All five trucks are equipped with spur-geared unit power axles, which are identical and interchangeable with all other trucks of the K series.

Gray Planer for Railroad Shops

A planer built to withstand the heavy cutting and rough use to which a machine of this type is subjected in railway practice is exhibited by the G. A. Gray Company, Cincinnati, Ohio. It was described in detail on page 381 of the June *Railway Mechanical Engineer*. The rail can be clamped or unclamped to the housings from the operator's usual position and can be raised or lowered by a single motion of the rail setter lever, which hangs within convenient reach of the operator. The single-shift rapid traverse will move the heads quickly into place by means of the traverse levers provided at the end of the rail within easy reach of the operator.

The machine is equipped with safety clutches which prevent the operator from attempting to raise the rail when it is clamped, and if one head is fed into the other, a clutch in the feed drive eliminates any liability of damage to the machine. It is equipped also with a lubricating system which supplies oil to all parts of the machine. The gear train runs in oil, and filtered oil is pumped to each of the driving shaft bearings and to the vees. Centralized oilers are provided also on the side heads and on the top race. The machine is built with a helical gear drive train throughout, from the first pinion to the drive rack inclusive. The bed of the planer is made double length so that the table does not overhang. The machine is equipped with a traverse motor which, although entirely disconnected from the line when not in use, starts instantly when a traverse lever is moved.

Bowser Method of Paint Distribution

S. F. Bowser & Co., Ft. Wayne, Ind., are exhibiting a system of handling paints which will tend to promote economy in paint distribution. This equipment was described in detail on page 377 of the June *Railway Mechanical Engineer*.

It consists of a series of five combined mixing tanks and measuring pumps. Each of these tanks consists of a steel cylinder of sufficient capacity to hold all the paint of one kind desired and keep it from contact with the air at all times. Each cylinder is equipped with an agitating device, and all cylinders are arranged in a row so that all agitators can be operated from one shaft, which in turn is operated by an electric motor. In addition, each cylinder is equipped with a self-measuring pump similar to those in use for distributing oil, except that the pumps, of necessity, are specially designed for handling paint. All the tanks are filled from a pipe line which avoids any wastage of oil in this operation. The tanks are so arranged as to require one, when securing paint, only to turn on the electric motor momentarily and then to measure out the required quantity of paint by means of the hand-operated, self-measuring pump, situated on the ground level at one side of the tank.

General Electric Portable Arc Welder

A portable arc welder, capable of delivering continuous power and permitting rapid production, with either high current and large electrodes or low current and small electrodes, is exhibited by the General Electric Company, Schenectady, N. Y., It was described in detail on page 380 of the June *Railway Mechanical Engineer*. The welder is a two-unit set, consisting of a motor and a generator. The generator is self-excited, thereby eliminating the necessity for a separate exciter. The machine can be used with any commercial sizes of metallic electrodes from 1-16 in. to ¼ in. in diameter. Any value of current between 75 and 300 amperes can be obtained in a large number of steps between these limits. The generator is a two-pole, self-excited, constant-energy, single-operator machine, with a dual magnetic circuit designed to operate at 60 volts, open circuit, and 20 to 25 volts under load. It is rated at 200 amperes for continuous service; 250 amperes for one hour, and 300 amperes for short periods. The complete set has three bearings, the two units being close-coupled by a solid flange coupling.

Ingersoll-Rand Air Hammer and Hoists

The Ingersoll-Rand Company, New York, is exhibiting a newly developed pneumatic riveting hammer and three pneumatic hoists. The features of the hammer are bolted handle construction, heavy section valve with liberal bearing surfaces, combined poppet and piston type throttle and low air consumption. This tool was described on page 129 of the February *Railway Mechanical Engineer*. These hammers are manufactured in three styles and are available in a size range of from 5-in. to 9-in. stroke. Each size can be fitted with any one of three barrel types and with either inside or outside trigger handles. Three alloy steel bolts of substantial size, fitted with lock washers, hold the handle to the barrel. This construction enables the hammer to be taken apart anywhere for cleaning and inspection. A deflector enables the operator to turn the exhaust in any desired direction.

The air hoists are of the I-Beam trolley type ranging in capacity from 500 lb. to 10,000 lb. and are suited for a wide range of service. All are of compact design, require little head room and are equipped with positive, automatic brakes for holding the load. A safety stop lever closes the throttle when the load reaches the top. These hoists were described in the April *Railway Mechanical Engineer*.

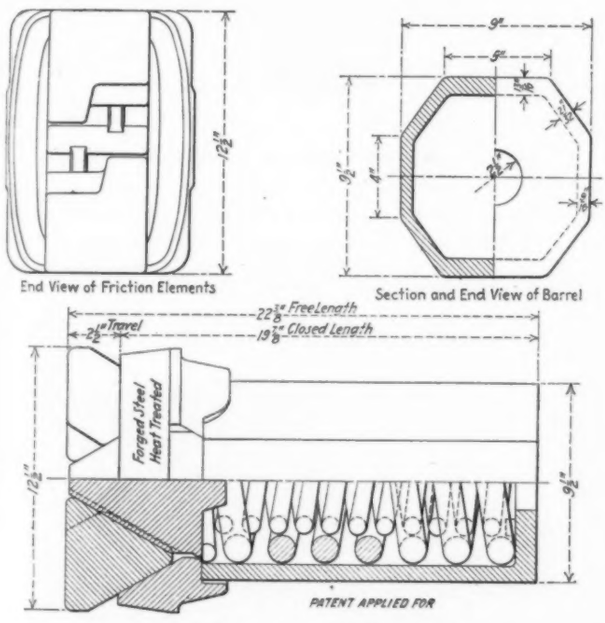
Metal Cutting Torches

A rather unusual design of tip for oxy-acetylene cutting torches has been developed and is being exhibited by The Alexander Milburn Company, Baltimore, Md. It embodies the desirable features of the standard tip and has a number of additional advantages that are distinct improvements. This tip is designed to permit supermixing of the gases and preheating of the cutting oxygen, as well as to give added velocity and penetration to the preheating and cutting jets. It is provided with a renewable seat which facilitates cleaning and maintenance. The mixture of the preheating gases takes place in multiple passages in the renewable seat. These gases then pass into an annular passage where they are given a swirling motion after which they are again separated and expanded into enlarged multiple passage leading to the orifices in the tip proper. Comparative cutting tests have demonstrated that this new tip is able to bring about a saving of approximately 18 per cent. over the old standard tip. This equipment was given a detailed description on page 380 of the June *Railway Mechanical Engineer*.

New Devices Among the Exhibits

Improved Friction Draft Gear

THE Walker Draft Gear Corporation, New York, is exhibiting an improvement in its friction draft gear, the design of which is shown in the drawing. Three equal angled triangular wedges are used, the center wedge acting directly on the coil springs. The travel is 2½ in., which is the amount that the side wedges move into the barrel of the gear. The center wedge has a travel of five inches, compressing the springs that distance. One of the outstanding features of this improved type gear is a design of interlocking wedges by means of tongues and grooves, which serve the purpose of holding the wedges in alignment, insuring their working to full capacity and eliminating the possibility of assembling the gear in any but the correct manner. The center wedge is locked into



The Interlocking Wedges of the Walker Draft Gear Prevent Incorrect Assembly

the gear as the lip or bevel is engaged underneath the sides of the friction box.

The barrel enclosing the gear is made of cast steel and has a minimum cross sectional area of 20 sq. in. The friction box is a drop forging, heat treated, with a minimum cross sectional area of 20 sq. in. The wedges are made of a special mixture of iron and steel.

With springs made of the ordinary commercial spring steel, the gear gives a total drop, under 99,000 lb. tup on a solid anvil, including the movement of the gear, of a little over 21½ in. With springs of special steel, a much higher drop is developed. After the travel is exhausted, all moving parts are enclosed in a solid column of steel, having a cross sectional area of 33-1/3 per cent more than the type D coupler.

A modification has been made in the barrel for use with Farlow attachments by the elimination of the flanges shown at the bottom of the barrel, thus making the gear that much lighter. All other parts of the gear are unchanged.

Q & C Unlimited Travel Roller Side Bearing

A CONTINUOUS FREE rolling action side bearing which is said not to slide is being exhibited by The Q & C Company, New York. The roller is free to keep turning constantly through the action of the vibration of the car, offering a new point of contact for each blow or load. Other types of fixed roller bearings offer but one point of contact for the constant pounding on straight track and tend to flatten to such an extent that they become in operative on curves.

It has been found that limited travel bearings are only 50 per cent operative. They roll freely in one direction but in the other they must slide because of the sticking of the roller at the end of its carriage. This is particularly noticeable when cars are entering or leaving curves owing to

Side Bearing Showing the Guides in Which the Roller Travels

momentum and the outer rail elevations, and also when cars get down on their side bearings. When these conditions exist, the side bearing may offer as much as 25,000 lb. pressure per guiding flange under 50-ton loaded cars and account for a 50 per cent. increase in train resistance. With the unlimited travel feature a minimum resistance is generally maintained.

The rollers of this bearing are made with a crown face so there is no side swiping of the carriage and no lateral wear, consequently no friction. The cradle and roller are drop forged and heat treated, being tougher and harder than the hardest alloy steel wheels. The managanese treats steel wheels, heat treated, show approximately 350 Brinnell hardness with a 59-61 Scleroscopic toughness. These rollers and plates go as high as 650 Brinnell hardness with a 50-55 Scleroscopic toughness.

The bearings are applicable, without change, either to the truck or body bolster, and are suitable for all classes of freight and passenger cars as well as locomotive tenders.

Distinctive Car Seating Equipment

THREE new types of chairs and car seats are being exhibited this year by the Heywood-Wakefield Company, Boston, Mass. This new seating equipment has been produced to meet the ever-increasing demand for more comfort and greater refinement of design. The three new chairs are known as the Luxureed, Traveluxe and Tourease.

The Luxureed is made of round hand-woven reed, there being several different designs, of which the one illustrated

The Traveluxe May Be Placed At Any Angle

is typical. This chair has a sturdy wood frame reinforced with angle iron braces. The reed is woven about the frame compactly so as to produce a strong and attractive parlor car or observation car chair. The chair can be mounted on a wide flanged iron base, or on four legs, as with the usual chair of this type. If secured with an iron base, it can also be equipped with a swivel if desired. The removable cushions have Comfy springs, are filled with curled hair and rest on a box spring construction. Plush, leather, or imitation leather upholstery, or any other covering material can be used if desired. The reed part of the chair can be finished to harmonize with the color motif of the car, if such a plan is preferred. The chairs are fastened only to the floor of the car and can be placed at any desired angle.

The Traveluxe chair is furnished in double or single sets. The chair has pressed steel sides with mahogany arm rests. The steel pedestal base enables the chair to be attached to the floor of the car only, and placed at any angle so as to increase the visibility of the person sitting on the aisle if double chairs are used. The back rest is unusually comfortable, being padded with curled hair. This chair has two cushions, the top one being removable. It is made with curled hair and Comfy springs, while the bottom cushion has a comfortable spring construction. The seat is 20 in. deep and the back 25 in. high. It can be furnished with any desired covering, although leather and imitation leather seem preferable. The metal parts are finished in olive green, or as specified. This chair is especially adapted to rail motor cars.

The Tourease seat has more the appearance of the usual car seat. It rests on a pressed steel oval base and is attached to cars both at the side and at the base. The cushion

The Luxureed for Parlor or Observation Cars

has a spring edge and is of a non-lifting fixed type, but detachable if desired. It has a pleated type of covering, double spring construction and Comfy springs over a wire top spring work. The seat is 18 in. deep. The back has a spring edge, pleated roll top, and is made 19 in. or 22.

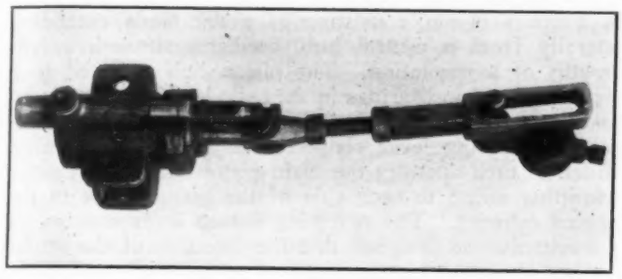
Simplicity and Comfort are Combined in the Tourese

high, as desired. The back is designed with a view to comfort, but is so built that it does not require any additional space for installation, being cut in for knee room without losing spring depth. Leather, or imitation leather coverings are generally used, although any other can be had if specified.

Locomotive Bell Ringer

THE BADEKER MANUFACTURING COMPANY, Chicago, is exhibiting a locomotive bell ringer which is designed to reduce the amount of air consumed. It is equipped with an outside adjustable supply valve which consists of a steel stem sliding in a bronze bushing. The stem is grooved with a labrinth packing which insures a tight air valve and makes it self-lubricating.

The piston is equipped with leak-proof packing rings

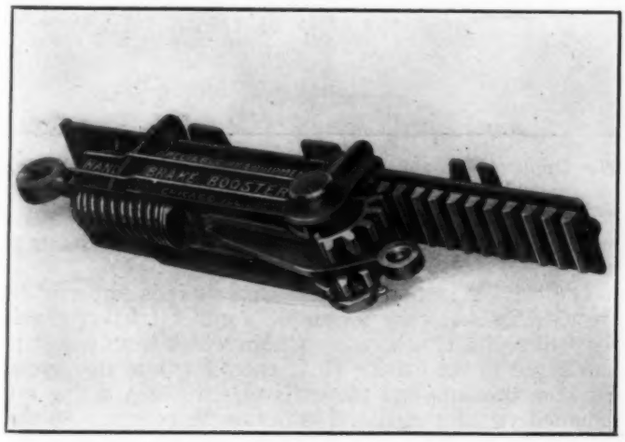


The Badeker Bell Ringer on Which All Adjustments are Made from the Outside

and the crank arm is closed so it cannot be lost. The bell ringer is adjusted from the outside for air pressures ranging from 50 to 150 lb.

Hand Brake Booster

THE RELIABLE RAILWAY EQUIPMENT COMPANY, of Chicago, is exhibiting a device designed to boost the power developed by the ordinary hand brake of either the hand wheel or ratchet lever type used on freight and passenger cars. This booster is installed underneath the car, one end being connected to the hand



The Hand Brake Booster Builds up the Braking Force After the Slack Has Been Taken Up

brake chain, the other end connected to the hand brake rod leading to the push rod of the brake cylinder.

The average switchman can exert a force equivalent to 1,500 lb. on the hand brake chain when using a brake stick on a standard 15-in. hand wheel. This is less than half of the force of 3,950 lb. exerted by a 10-in. brake cylinder with 50-lb. brake pipe pressure. In setting a hand brake equipped with this device, the booster slides along the rack until all the slack has been taken up. The length of the rack makes it possible to take up any ordinary amount of slack. As soon as all the slack has been taken up and additional force is applied to the hand wheel, the booster automatically comes into operation. The lever arm connected to the brake chain drops down, causing the teeth to engage the rack with a pinch bar effect. In this position a force of 1,500 lb. on the brake chain is increased to 6,000 lb., or nearly double the force exerted by the brake cylinder. In addition to this increased power, the booster is designed to give a quick take-up. It is only necessary to take up about 11 in. of chain on a car having an 8-in. piston travel, which represents less than 1½ turns of the chain around the brake mast, making it impossible for the chain to bind.

An important feature of the booster is the fact that its power is graduated, the amount of the force at any point ranging from zero to 6,000 lb.

A Special M. C. B. Billing Machine

THE Remington Typewriter Company, New York, is exhibiting a special accounting machine for use in M. C. B. billing departments. It consists of a standard No. 11 typewriter equipped with nine totalizers to perform the additions in each column of a standard M. C. B. bill, and a special totalizer for the labor column to handle fractional hours.

Economy is effected because of the saving in the time of writing the bill and in the handling of the bill because of its legibility. The bill leaves the machine complete—all

A Special Typewriter Which Handles M. C. B. Bills to Completion

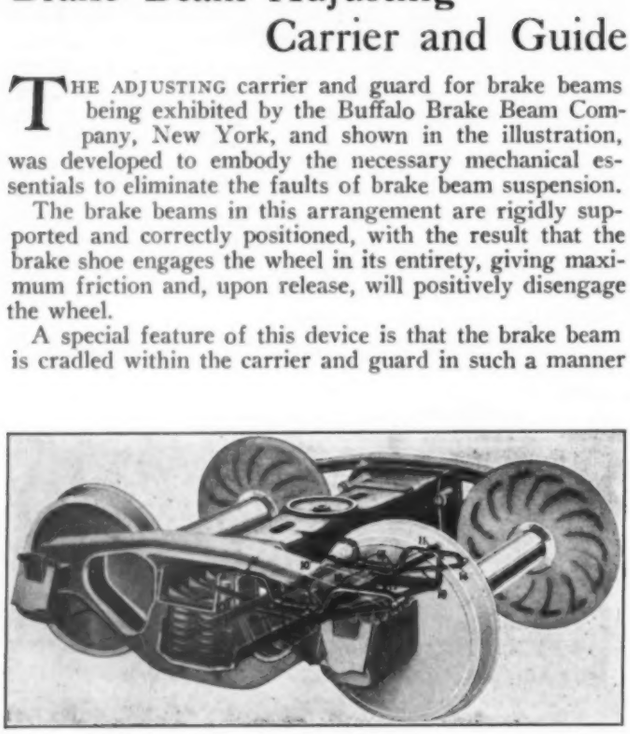
columns being added as written. It is possible to bill 2,500 to 3,000 cards in a day by the use of these machines. A number of these machines are already in use.

Brake Beam Adjusting Carrier and Guide

THE ADJUSTING carrier and guard for brake beams being exhibited by the Buffalo Brake Beam Company, New York, and shown in the illustration, was developed to embody the necessary mechanical essentials to eliminate the faults of brake beam suspension.

The brake beams in this arrangement are rigidly supported and correctly positioned, with the result that the brake shoe engages the wheel in its entirety, giving maximum friction and, upon release, will positively disengage the wheel.

A special feature of this device is that the brake beam is cradled within the carrier and guard in such a manner



The Buffalo Adjusting Brake Beam Carrier

as to afford absolute safety, both upward and downward movement of the brake beam being protected during the application of brakes.

A Simple All-Steel Side Bearing

SIMPLICITY AND strength have been combined in the new Stucki side bearing being exhibited by the A. Stucki Company, Pittsburgh, Pa. The underlying principles of the original Stucki bearing have not been changed, but the roller cage and bottom plate are now made in one piece so that the present device consists of only

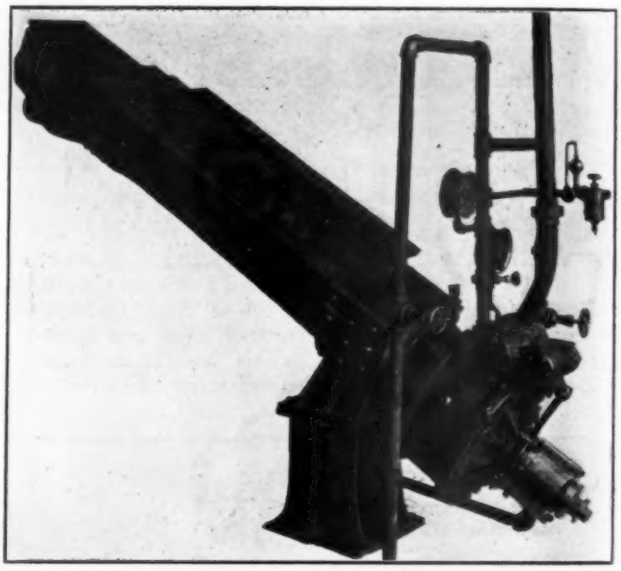
The Stucki Side Bearing with Tempered Rolled Steel Cage

three parts—the cage roller and top plate. The new cage is made of tempered, high carbon, rolled steel and, considering the fact that some of the standard Stucki side bearings have given 12 years' service, this new steel cage is expected to last as long as the car itself.

Mechanical Stoker for Steam Shovels

THE LOCOMOTIVE STOKER COMPANY, Pittsburgh, Pa., is exhibiting an entirely new type of stoker which they have designed for application to stationary boilers of the steam shovel type, where clearances are very limited. A new type of oscillating engine was developed to meet the condition of limited space available on steam shovels and for small boilers of this type.

The engine consists of a 17-in. bore cylinder 9 in. wide, in which a piston, consisting of a flat blade extending laterally from a central hub, oscillates through seven-eighths of a revolution. The piston hub is keyed to a shaft mounted in bearings in the cylinder heads. Secured to this shaft are two reversing rollers which operate a reversing spring lever connected to an auxiliary valve, which in turn operates the main piston valve, alternately admitting steam to each side of the piston blade in the engine cylinder. The reversing spring lever consists of a mechanism so designed that the direction of the stroke



The Duplex G-2 Stoker is Designed for Use on Stationary Type Boilers Where Space is Limited

of the piston may be reversed at any time by operating a hand lever.

The driving motion of the piston shaft is imparted to the elevator screw by means of a roller friction clutch consisting of a clutch casing within which is an eccentric hub keyed to the driving shaft extending into the screw. Between this hub and the walls of the clutch casing are mounted two forward and two reverse rollers. As the casing revolves the rollers become wedged between the eccentric hub and the casing, thus turning the screw. A roller shifter is provided to shift out the forward rollers and shift in the reverse rollers when it is desired to reverse the screw. The shifter can also be placed in the neutral position to allow the screw to remain at rest and the engine to run idle. A desirable feature of this type of engine is that it can readily be removed from the stoker as a complete unit.

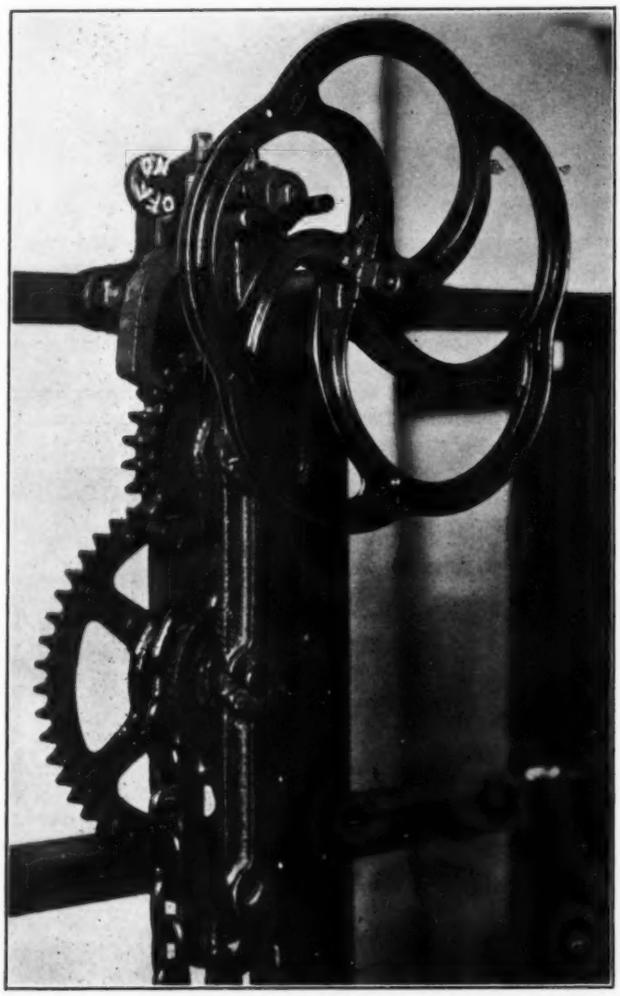
The conveying, elevating and coal-breaking mechanism consists of a vee-shaped trough set at an angle of 31 deg. above horizontal and 89 in. long, in which is an elevator screw 88½ in. long and 9½ in. diameter. At the top

of the vee-shaped trough is a coal breaker similar to that of the Duplex stoker. The coal from the hopper-shaped coal bins slides through an opening into the stoker trough, which is covered by a slide plate arrangement. This arrangement also provides for hand firing if desired.

The distributing system consists of an elevator agitator, a distributor elbow and distributor tube, the latter including a distributor jet arrangement located at the front bottom portion of the tube, the steam passing through a passage-way in the bottom wall of the tube and entering the jet nozzle, in which are small 3/16-in. to ¼-in. diameter openings at various angles. The steam passing through these openings spreads the coal coming out of the tube evenly over all portions of the fire box. By varying the pressure in the three steam jet pipes, flexibility of distribution is secured.

Peacock Brake for Open Top Cars

THE NATIONAL Brake Company, Inc., Buffalo, is exhibiting the new No. 210 Peacock brake which has been designed for use on ore and coal cars and for freight car equipment. This brake develops



A New Peacock Brake Which Develops 5,000 lb. from a 125-lb. Pull on the Handwheel

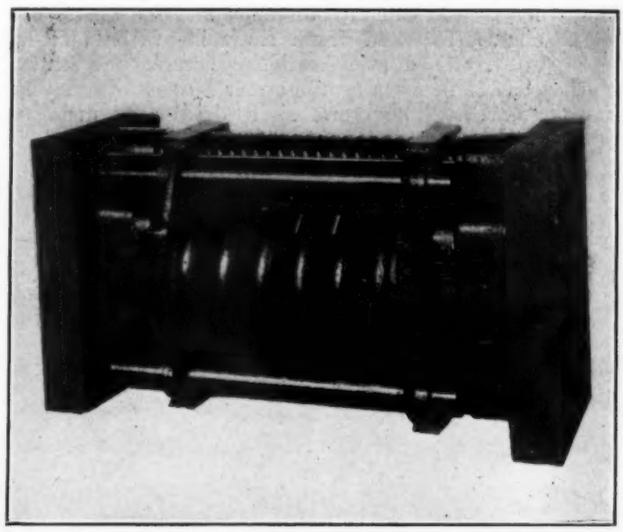
unusual braking power, a 125-lb. pull on a 16-in. hand wheel developing 5,000 lb. on the chain.

The design of this brake permits installation below the top of the car so that in the case of coal cars and cars of similar type, there is no danger of the brake being made inoperative by being struck by clam shell buckets. The brake occupies very little space and as a rule can be so installed that even though the end of the car becomes bulged from shock or other causes the brake will not be thrown out of commission.

Hall Friction Draft Gear

THE HALL DRAFT GEAR CORPORATION, Watervliet, N. Y., has developed in the new Class K-10, a high capacity friction draft gear having large friction surfaces and positive release.

The friction elements are composed of high-carbon steel plates driven by contact with the steel followers at both ends. These plates are pressed together by the large



The Friction Elements of the Hall K-10 Draft Gear Are Made Up of Steel Plates

spring operating on shoes and wedges at both ends of the draft gear, which gives an approximately even distribution of the load, and a frictional resistance is set up by the action of each end of this spring. The oversolid loads or the gear loads are taken direct on the friction plates. The only load taken by the cast wedging members is the load set up by the friction spring. This arrangement insures low stresses at all times in the wedging members. The oversolid loads are carried by the four corner posts which are 2¼-in. diameter with a capacity in excess of the coupler butt. With the large friction area obtained by the use of plates for friction members, it is only necessary to apply a small load per square inch of friction area in order to obtain a high capacity, which is necessary to obtain proper protection against damage to cars or ladings.

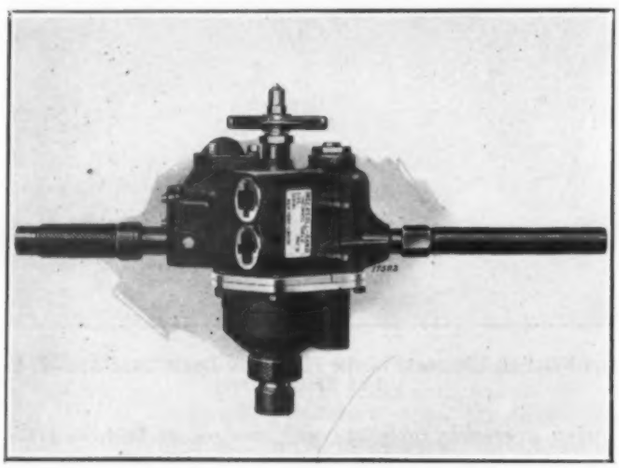
Smoothness of action, or draft gear resistance, is important as the gear resistance is transmitted direct to the car sills. The large friction area, with a friction pressure comparatively low, does not set up irregular wearing, seizing or sticking causing undue disturbances or vibrations of the car and ladings. The drop test curve on this gear shows that the resistance of the draft gear increases uniformly as the gear is closed. The comparatively low setting up pressures on the friction surfaces allows smooth operation of the friction plates. Release of this draft

gear is effected by the two outer springs forcing the wedging members out of contact as soon as the draft gear load is sufficiently reduced. The action of the large spring throws the friction plates back into position without setting up a wedging action.

One-Man Staybolt Tapping Machine

THE INGERSOLL-RAND COMPANY, New York, is exhibiting a new size, CCSB, air-motor designed especially for handling staybolt taps up to 1⅜-in. diameter. One of the outstanding features of this new type motor is the provision for renewal of worn or broken parts. The four cylinders are no longer made as a part of the casing, but consist of liners which fit into the casing and are interchangeable. A keyway in each cylinder liner locates it so that the ports are properly positioned. The cylinder head caps are threaded into the liners.

The counter-balanced crank shaft is of the built-up type with hardened steel stationary crank pin sleeves which are held in place by the crank throws and may be easily renewed. The crank shaft drives the main or spindle shaft through helical gears. Lubrication is effected by forcing oil or grease through the hollow cranks



An Important Feature of the Ingersoll-Rand Size CCSB Tapping Machine Is the Governor Which Prevents Racing

both by the rotation of the shaft and by air pressure inside the casing. The built up crank shaft construction has overcome uneven crank pin wear due to variations in hardening.

The valve in this machine is of noteworthy design. One valve controls the distribution of air to the four cylinders. The fact that only one valve is used instead of two cuts the valve speed in half and reduces wear. The valve has a positive drive through a spur gear which is separate from the spindle and may be separately renewed. The spur gear drive insures accurate timing.

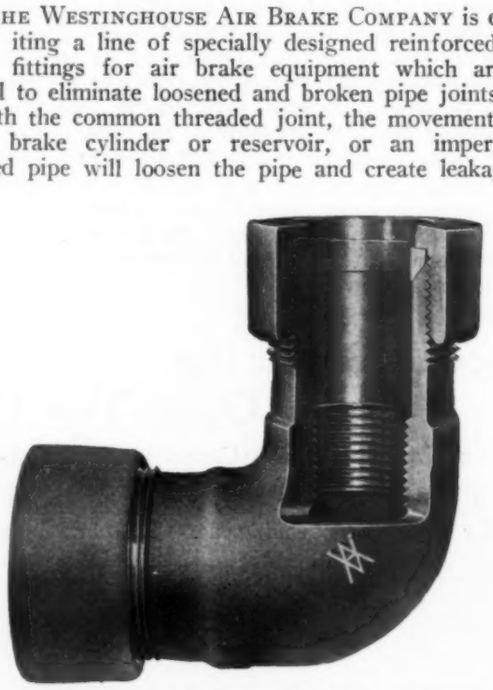
Incorporated in the valve spindle is a centrifugal governor which cuts down the inlet port opening when the free running speed has reached approximately 300 r. p. m. This governor feature is especially useful in tapping operations as it reduces the possibility of burned taps and the stripping of threads in firebox sheets where the free running speed is not controlled.

The weight of this machine is only 30 lb., making it convenient for operation by one man.

Westinghouse Reinforced Pipe Fittings

THE WESTINGHOUSE AIR BRAKE COMPANY is exhibiting a line of specially designed reinforced pipe fittings for air brake equipment which are designed to eliminate loosened and broken pipe joints.

With the common threaded joint, the movement of a loose brake cylinder or reservoir, or an imperfectly formed pipe will loosen the pipe and create leakage or



Beveled Ring Fitting for Use on Pipes Larger than ½-In. Diameter

break the pipe, because the strain is concentrated at the weakest point, the root of the thread. The Westinghouse special reinforced fitting overcomes this trouble by gripping the pipe firmly beyond the thread, so that all strains are concentrated at the strongest point, the full section of the pipe, and not at the threaded joint.

For pipes of ½-in. diameter and less, the fitting incorporates a split sleeve, while for larger sizes a split beveled

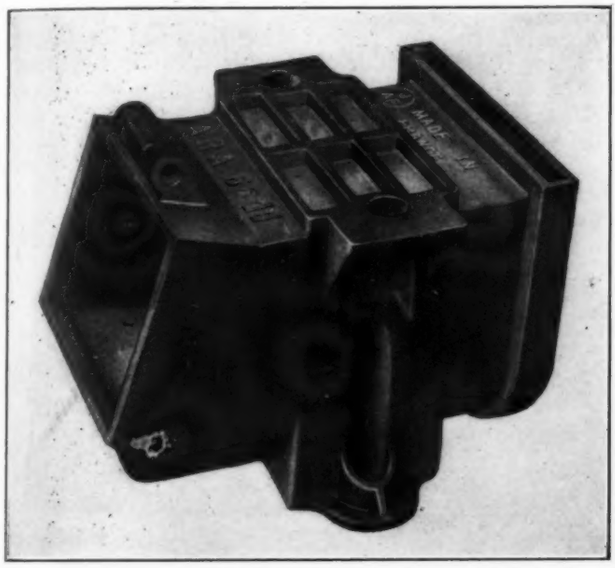
The Strain Is Concentrated on the Full Section of the Pipe By the Grip of the Split Sleeve in the Westinghouse Reinforced Pipe Fittings

ring is employed, a clamping nut being used to compress the sleeve or close in the ring to grip the pipe firmly. These special fittings are available for the brake cylinder pipe connection of the standard detached freight brake equipment in the form of a flanged union, and also tees, elbows and couplings for general use in air brake piping.

Cast Steel Journal Box

AMONG THE devices being exhibited for the first time this year will be found the Walker cast steel freight car journal box. This product is manufactured at the Feignies Steel Foundry in France and is being introduced and exhibited by L. S. and E. H. Walker, New York. These boxes conform to A. R. A. specifications and the foundry inspection includes gaging with A. R. A. gages. Any standard A. R. A. journal box lid may be used.

Increased strength is provided at a reduction in weight and, for purposes of comparison, the weight of the Walker 5-in. by 9-in. box, without lid, is 79 lb., and the 6-in. by 11-in. box, without lid, is 100 lbs. Actual service tests on American railroads were made during a preparatory period of 14 months and a number of these boxes now in use in this country are said to be rendering satisfactory service.



The Walker Cast Steel Journal Box Is a French Product Made to Conform to A. R. A. Specifications

Globe Trackless Door Hanger

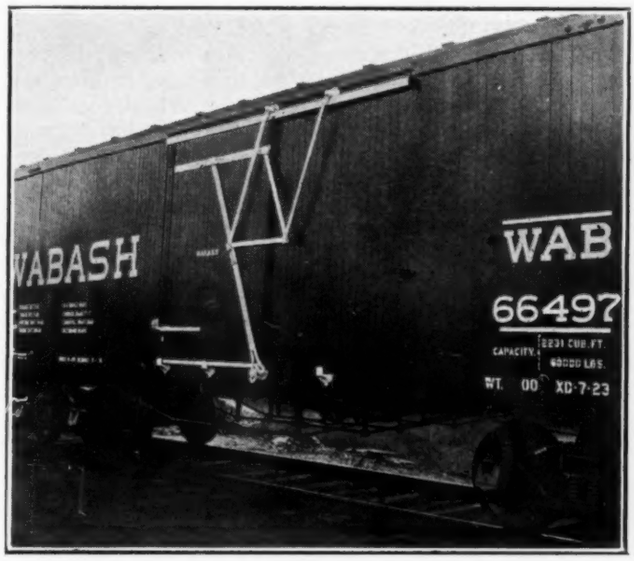
THE TRACKLESS door hanger illustrated is made by the Globe Railway Equipment Company, St. Louis, and has been tested under actual service conditions for approximately a year and a half on the Union Pacific, Wabash and Missouri-Kansas-Texas. One of the most interesting features of this hanger is the absence of any track or rollers. The door is suspended from the upper plate by a system of levers and pins, practically forming a pantagraph arrangement which causes the door to move horizontally. The only friction caused by the movement is that on the pins, and the elimination of rolling friction encountered in the ordinary type of freight car door greatly promotes ease of door operation.

The door does not bear on the Z-bar which guides it at the top or on the three castings which guide it at the bottom. Normally, it has ½ in. clearance at both the top and bottom. The three-bottom castings merely serve to guide the door and prevent it from swinging out. The door is further guided by the main ½-in. by 2½-in. Y-bar which is the longest bar shown in the illustration.

The action of the Globe door hanger is not that of a true pantagraph. A slight variation is caused by the Y-bar which forces the door to move in a truly horizontal direction. The door can be readily operated by one hand with slight effort, an important advantage from several points of view. With easy-operating doors there will be a tendency for the trainmen to keep the doors of empty cars closed, with a resultant decrease in train resistance and corresponding fuel economy. Easy-operating doors also are a great time saver in getting long trains under way in the yards and terminals, and this promotes an increased use of car equipment.

It may also be said that the construction of the Globe door-operating mechanism is such as to preclude any possibility of the doors becaming lost or swinging out with the resulting danger to passing equipment, passengers and employees. A further advantage results from the fact that the doors do not lend themselves to the pilfrage of the contents of the car, which is possible with the usual type of car door. In this case the heavy Y-bar is secured to the car sill by a large bolt which extends through the sill and prevents the rear of the door being pried open, as is commonly done, to get at the contents of the car without breaking the seal.

The door is readily removed for repairs, which is said to be accomplished at small expense owing to the fact that there are no wearing parts except the pins and bushings. The provision of the guide castings on the bottom would prevent the door from falling should the car be sideswiped and all the operating levers broken. Moreover, under this condition it would still be possible to operate the door with practically the same ease as ordinary box car doors. There is no particular danger of the operating levers being struck by passing equipment, as they extend a shorter distance from the body of the car than the side ladders and other fixtures.



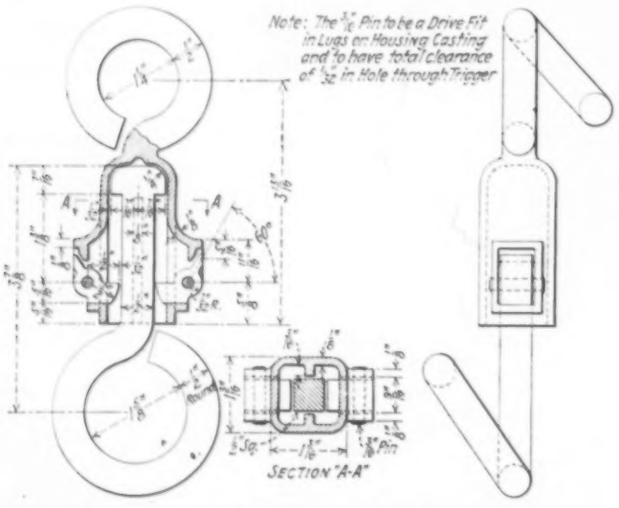
Globe Trackless Door Hanger Applied to Wabash Freight Car

A Tank Car Valve With a Service Record

AN EXHIBIT of interest to those having to do with the construction and operation of tank cars is a bottom outlet tank car valve which was manufactured, is being exhibited by the Everlasting Valve Company, Jersey City, N. J., and which has recently completed a four-year service test. This valve was originally installed on a car of 80,000 gal. capacity on April 30, 1920. One of the first of its notable performances was to discharge over 80,000 gal. of gasoline from this car in 19 min. 41 sec. After 14 months of practically continuous service the valve showed only a slight leak—60 drops per minute. At this time the car to which it was applied was shopped, the valve opened up and the disk found to be slightly worn. All parts were cleaned and the disk ground in. In January, 1922, this valve arrived at Youngstown, Ohio, frozen shut and in forcing it open the operating mechanism was distorted. Because of this fact leakage developed so that in February, 1922, the car was again shopped at Tulsa, Okla., and the valve overhauled. Except for the distortion of the operating mechanism, the valve was reported to be in good mechanical condition. In August, 1923, a new disk spring was installed. From that time until January, 1924, there were intermittent periods when it showed a perfectly tight condition and others when slight leaks developed. This valve is being exhibited during the convention in the condition which it was removed from the tank car without alteration in any way.

A Coupler Release Rigging

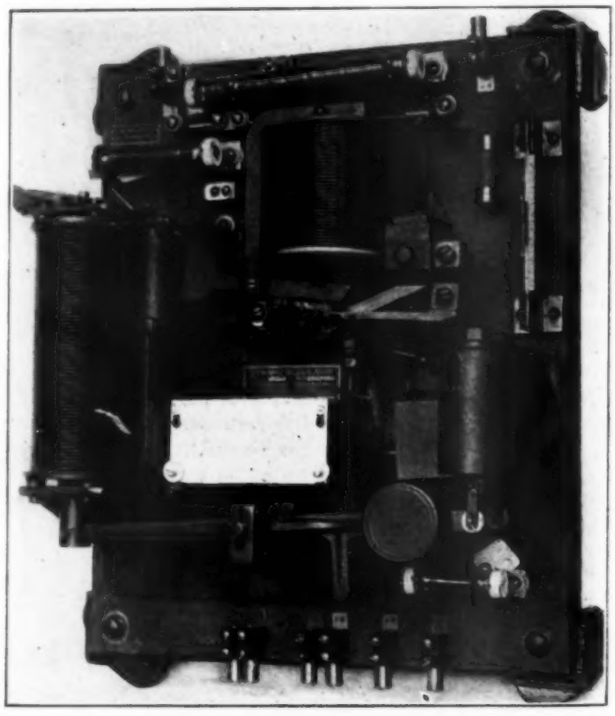
THE UNION RAILWAY EQUIPMENT COMPANY, Chicago, is exhibiting a coupler release rigging which is designed so that it can be separated by the simple means of pushing down two triggers, one on either side, which are enclosed in the housing, permitting the lower shank to be pulled out. This is a great convenience when it is necessary to remove the coupler temporarily or taking down the uncoupling lever. In this connection, it can also be readily applied to the lever and to the coupler lock without removal of either, and by merely inserting the shank into the housing it locks itself securely and automatically. The upper eye, housing and triggers are of malleable iron and the shank or lower eye is a forging. The triggers are inserted in the housing and secured in a compact manner so they cannot be lost or misplaced and their openings are so designed as to be free from cinders or other obstructions. The device is built in a substantial manner to take care of the service for which it is intended.


Note: The 3/16" Pin to be a Drive Fit in Lugs on Housing Casting and to have total clearance of 1/32" in Hole through Trigger
SECTION "A-A"

By Pushing Down the Triggers This Coupler Rigging Is Instantly Separated

Universal Generator Regulator

AMONG THE new devices being shown at the exhibit of the Safety Car Heating & Lighting Company, New Haven, is an arrangement on the back of car lighting generator regulators making them interchangeable regardless of their capacity and resulting in a reduction in the number of parts to be carried in stock. The current regulating coil and main switch series coil are wound for 25 and 50 amperes capacity only, but the connections are so arranged that a regulator with 25-ampere coils can be set for either 25 or 40 amperes and the regulator with 50-ampere coils can be set for either 50, 75 or 100 amperes.



The Universal Regulator Is Suitable for a Wide Range of Current Control

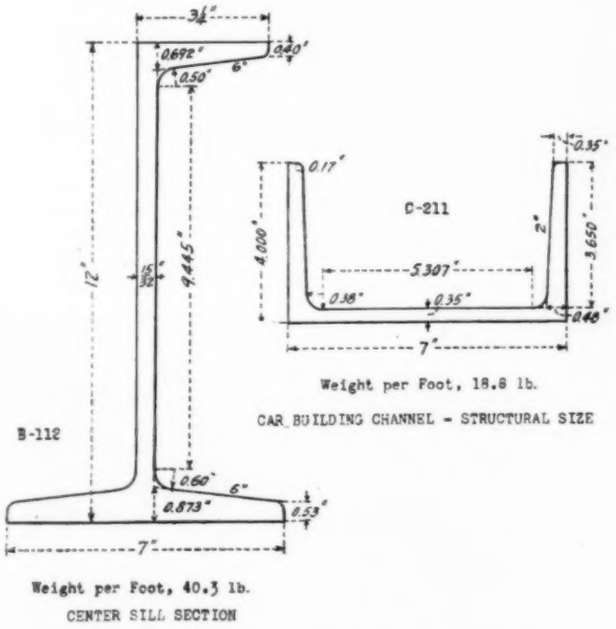
When these improved generator regulators are applied for use with generators having capacity less than the maximum setting of the regulator, a fibre cap is applied to the cut-out stud so that the regulator cannot be set above the maximum capacity of the generator. If it is later found desirable to use a higher capacity generator with this same regulator, maximum setting is obtained by substituting a brass cap in place of the fibre cap.

New Carnegie Car Sections

INCORPORATED IN the proposed standard A. R. A. box car designs are two rolled steel sections which are of especial interest interest to the car builder and the railroad companies. These sections are shown in the drawing and are a special 12-in. center sill beam in a 7-in. wide flanged side sill channel.

These sections are being produced by Carnegie Steel Company, Pittsburgh, and are on exhibit as rolled, together with a section of fabricated center sill.

The center sill beam is a simple integral section designed to replace the fabricated channel and angle section now in common use. The use of this section elim-



Carnegie Car Building Sections Rolled to Conform to the Car Construction Committee's Recommendations

inates the punching and riveting required in present practice and provides a section of high efficiency with minimum weight.

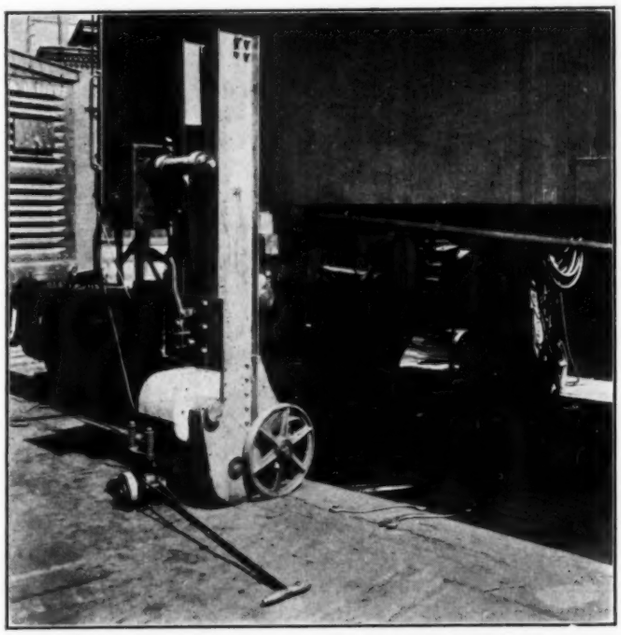
The seven-inch channel with four-inch flanges gives a section with great lateral stiffness, to which side framing and flooring system can be readily attached.

Car Hoist Which Combines Speed With Safety

A UNIQUE DEVICE is offered in the newly developed portable car hoist, being exhibited by The Whiting Corporation, Harvey, Ill. It embodies the same basic principles as the Whiting locomotive and car hoists which have become well established in recent years.

The Whiting portable hoist is a motor-driven screw jack mounted in a substantial frame with three bearing surfaces, spaced to give much greater stability than in ordinary jacks. A toggle arrangement raises the jack off these bearing surfaces and allows it to be pulled from place to place on wheels like a small truck. One, two, or four hoists can be operated as a unit, the control being centralized in one push button station.

The portable unit makes unnecessary a special foundation or pit, and its use is extended to any point in the shop or yard where there is a level floor capable of supporting the load. These hoists are as easily portable as other heavy duty jacks and their greater stability adds to their safety. Power is required to lower the load so that a car



A Motor Driven Screw Jack Whiting Car Hoist

can be supported on the hoists without blocking and left over the noon hour or over night without danger.

The portable hoist can be used under any type of car and for any operation. When removing the trucks, four are used, two at each end of the car, permitting the trucks to be grouped and handled together. When removing one, two or three pairs of wheels, or renewing springs, two hoists are used and the truck is supported by suitable clamps from the under frame of the car during the lifting operation. This universal application makes possible the elimination of many sizes and styles of jacks ordinarily used. In one recent installation, 12 such jacks were replaced by one set of hoists.

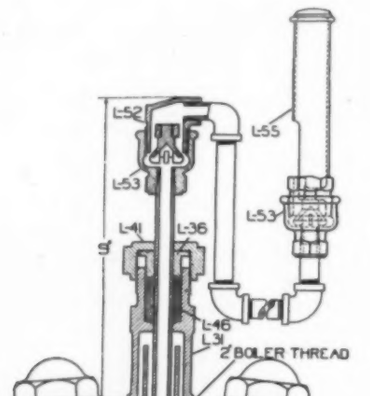
The Improved Cleveland Low Water Alarm

THE TALMAGE MANUFACTURING COMPANY, Cleveland, Ohio, is exhibiting this year a redesign of the Cleveland low water alarm. In the new design the crown sheet case does not project below the sheet, and the steel inside tube is protected by a steel outside tube.

When the boiler is under pressure, dry steam, taken at a point above the roof sheet from the dome-like lower portion of the stuffing box, fills the space between the tubes and surrounds the lower end of the fusible plug.

The fusible plug, L-16, is filled with pure tin, and prevents the steam from escaping to the whistle as long as water surrounds the alarm cage. When the water leaves the lower region of the cage, the steam lying above the firebox closing plug, L-21, becomes superheated, which, with the heat transmitted through this plug to the walls of the cage and then to the fusible

plug, quickly melts the tin. Tin melts at 446 deg. F., only 58 deg. above the temperature already in the boiler at 200 lb. pressure. The pressure then forces the softened tin out of the fusible plug, up the inner tube where it lodges in the elbow trap, L-52, while the steam blows



Cross-Sectional View Showing Method of Protecting Inter Tube from Scales and Sediment

the alarm whistle so located that the engineman can see as well as hear the escaping steam.

After recovering the water the whistle may be muffled, but no shut-off is provided purposely in order that the responsibility for the low water may be fixed. The loss of steam through the small hole in the fused plug will not prevent the locomotive from being run to its regular terminal, where the reason for the low water can be determined and a new fusible plug can be applied.

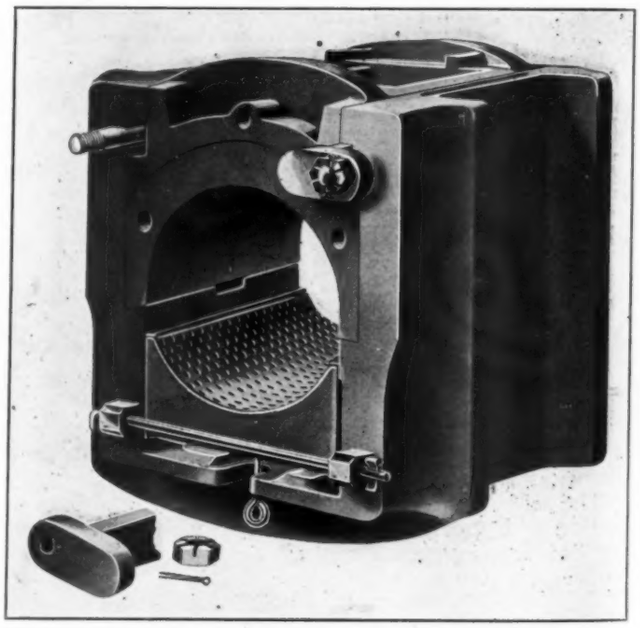
A Tapered Arc Welding Electrode

TAPEROD IS the name which has been coined to describe an arc welding electrode which is smaller at one end than at the other. It is being shown and demonstrated by the Electric Arc Cutting & Welding Company of Newark, N. J. The purpose of this form of rod is to provide for the undesirable heating of the electrode. As the heat develops in welding, the uniform increase in the thickness of the tapered electrode provides heat compensation along its entire length. The heating of the rod due to resistance loss is compensated for by the larger diameter of that part of the electrode which carries the current the longest. The manufacturer states that the gradually increasing diameter of the electrode allows a corresponding increase in deposition with a constant heat value in the work while waste ends are reduced to a minimum because the rod does not become red hot as it becomes short.

The electrodes are tapered by a rolling and swagging process and are coated after being shaped. The rolling and swagging is an added factor in the process of manufacture but the price of the tapered rods is not to be increased above that of the straight flux coated electrodes manufactured by this company. Taperods are made from a variety of materials for all kinds of electric arc welding. They are made in one size only; 1/8 in. in diameter at one end and 5/32 in. at the other.

The Franklin Driving Box

THE CONVENTIONAL driving box has the sides and the top cast integral. The bottom is open and contains a separate, removable lubricating cellar. The bearing is forced into the box under heavy pressure. Since it is impractical to provide a bearing surface on the removable cellar, such a box has a break in the bearing surface between the hub face and the driving wheel. This undesirable feature is remedied in the driving box which is being exhibited this year by the Franklin Railway Supply Company, New York, by coring out the bottom portion of the box to form a receptacle for the lubricator and leaving the outer or hub wall, solid which, together with the bearing and retainer, forms a complete circular bearing for the hub face of the wheel. If desirable, this hub



The Crown Bearing can be Removed without Dropping the Wheels

face can be lined with babbitt or brass, thus improving the bearing surface.

The bearing of the box is held in place by a retainer which rests on the bearing and transmits thereto its proportion of the weight of the locomotive. This retainer and the bearings are clamped together and held immovable by two tapered wedges, the bearing surfaces of which are shaped to lock the parts together. The bottom portion of the box is cored out to form a receptacle for the lubricator. The outer or hub wall of the cavity is solid, forming with the bearing and retainer a complete circular bearing for the hub face of the wheel. Lugs are provided on the bottoms of the sides of the bearing which fit into recesses cast in the box and prevent an endwise move-

ment of the bearing. On the top of the bearing is a ridge which fits into a corresponding groove cut into the bearing retainer. This prevents any end movement of the bearing retainer. This interlocking makes the construction equivalent to an integral box, bearing and cellar.

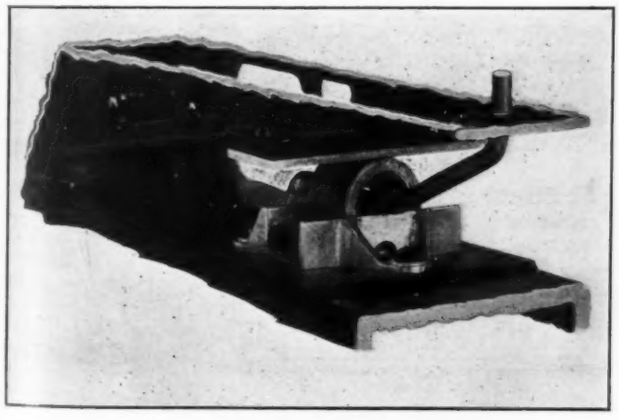
The lubricator used is of the Franklin standard type, except that the grease container has no end wall on the hub side. The end wall is unnecessary, as an equivalent is cast integral with the box. This construction makes it possible to remove the grease container to inspect the grease cake without disturbing the other lubricator parts.

The lubricator is provided with one indicator only, on the inside of the box, so that the lubricator can be withdrawn entirely from the box for refilling or inspection. This is easily done by taking out the single retaining pin.

Self-spotting Roller Side Bearing

AMONG THE exhibits of the STANDARD COUPLER COMPANY, New York, will be found the Goodwin Roller side bearing, into the design of which several unusual features have been incorporated. In this device a cylindrical, heat treated, forged steel roller is guided in the housing by an arm, the inner end of which is fulcrumed in the housing and the outer end loosely attached to the car body bolster. By this means the swinging of the truck bolster, to which the housing is riveted, automatically keeps the roller in position beneath the load so that the torque occasioned by the load on curves is equally divided between the truck and body bolsters instead of being unbalanced.

Due to the fact that the roller runway is a plane surface the vertical side bearing clearance is constant, regardless of the deflection of the truck under the car body, and such clearance can be established at a desired minimum.

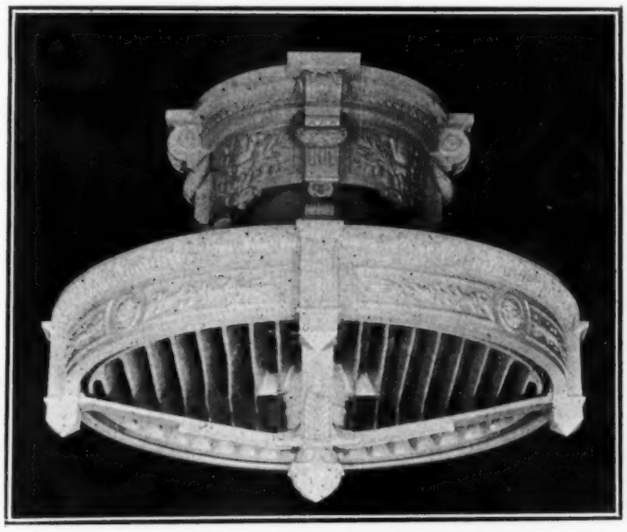


The Action of the Guide Arm Keeps the Roller in Position at the Point of Maximum Load

Although the size of the device as a whole adheres to A. R. A. standards, the roller is of unusually large dimensions and, consequently, the load per unit of contact area is minimized. The roller has no trunnions and there is no tendency of the roller edges to bind against the sides of the runway. The housing is open-ended and vent-holes, which create air-cleansing currents, are provided in the runway flanges. Thus the escape of foreign matter is facilitated.

An Ornamental Electric Fan

AN ATTRACTIVE ceiling fan has been developed by the Safety Car Heating & Lighting Company, New Haven, Conn., and is a part of its exhibit this year. In addition to having a pleasing appearance, it indicates possibilities in the way of ornamentation. The particular type exhibited has several improvements, among which is the omission of the belt drive between the air propeller and the air deflector.



A Ceiling Fan of Exceptionally Pleasing Appearance

A Composite Welding Electrode

AN ARC welding electrode of unique construction is being shown for the first time at Atlantic City by the General Electric Company. It consists of a central metallic core surrounded by a layer of flux, which is enclosed by an outer metallic layer or sheath. The sheath prevents the flaking off of the flux in handling and insures against dissipation of the flux by the arc. The desirable characteristics of the electrode as listed by the manufacturer are stability of the arc, with the resultant ease of manipulation; rapid deposition and good penetration; sound, tough welds made without the necessity of removing the slag of previous layers; maximum economy resulting from high welding speed, small amount of power consumed, small amount of metal for required strength and high quality and reliability of the weld.

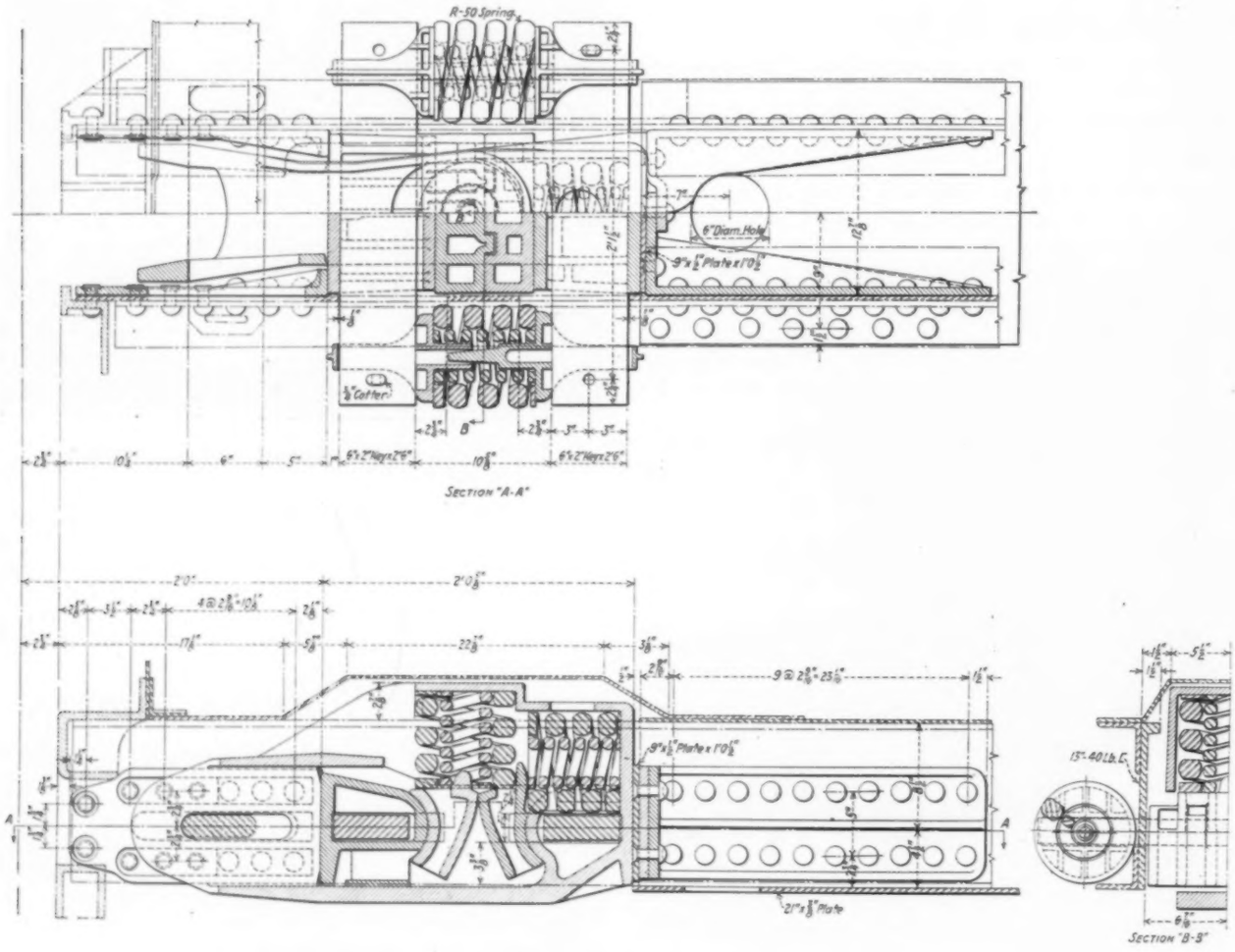
The electrodes are supplied in four sizes, 3/32,⅛, 5/32 and ¼ in. in diameter. The coating of flux between the core and the sheath is 2½ thousandths of an inch thick. It is shipped in coils or reels, or is straightened and cut to either 14-in. or 22-in. lengths, and supplied this way in 50-lb. bundles.

Friction Draft Gear for High Capacity Cars

A NEW DRAFT gear of high capacity and unusual design is being exhibited at the convention by the Bradford Corporation, New York. The model shown is a duplicate of the gears applied to part of the last order of 120-ton cars for the Virginian Railway. Details of the gear itself and the center sill construction are shown in the drawing herewith. As will be noted from the illustration, the gear combines friction members located between the sills and spring members working on keys extending through the sills. The yoke and housing are made of a single integral steel casting. The friction members of the gear consist of two rockers placed within the housing. The rear rocker has a cylindrical bearing on the housing and the front rocker works on a follower located back of the coupler butt. A horizontal spring engages the upper end of the rear rocker and a vertical spring bears down on the top of the front rocker. When the gear is closed either by a buff or a pull, the rockers are forced together, causing movement on the fulcrums and compression of the springs. As the rockers come together, the point of contact between them moves closer to the center line of the draft, thereby causing a rapid increase in the force exerted by the gear. The transverse keys extending through the sills support the gear and also transmit forces from the outside springs which serve to increase the capacity in closing and insure adequate force to return the gear to its normal position in release.

A unique type of construction has been used at the rear lugs on this design. The lugs are overlapped at the center and are further joined by a ½-in. plate riveted across the front face between the sills. With this arrangement all the rivets in the draft lugs can be driven with a power riveter and in addition, the center sills are tied together very securely at the point where the maximum force is exerted in buffing and where spreading of the sills most frequently occurs.

This draft gear develops an ultimate resistance of 680,000 lb. Gears of the same type differing somewhat in details of design have been in service for more than three years with very satisfactory results.



General Arrangement of Bradford Draft Gear Showing Center Sill Construction